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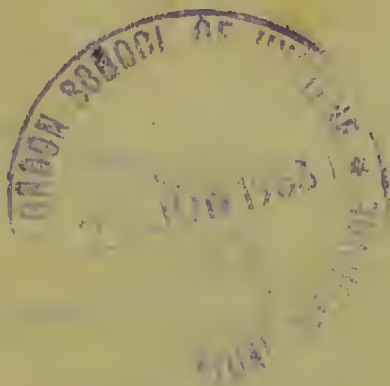
A
SKETCH,
(Analytical)
OF THE
HISTORY AND CURE
OF
CONTAGIOUS FEVER.



BY
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PREFACE.



FEVER, in one form or other, as the most common, is the most important of the diseases to which the human frame is liable; it is the one which more than any other has attracted the attention of the Author. The Author's views upon the subject have been before the public for a long time past; not, he is ready to confess, in a systematic and well digested form, but still he believes in a form that is intelligible, and that may be applied to use by the junior members of the profession. With the intention of putting the public in possession of any knowledge he might have acquired by observation, in a long course of experience, he published, in the year 1817, a Sketch of the History and

Cure of Endemic Fever; and, that the subject of febrile diseases may be farther elucidated, he now adds to it a similar sketch of the fever which is contagious; a disease of frequent occurrence in civilized life, often generated by artificial causes, and oftener aggravated than moderated by the means that are instituted for its cure; that is, by the institution of hospitals for masses of military sick. The Author has little opportunity, in his present situation, of applying to books for information on the subject of which he treats; and, if he had the opportunity, the labour of reading with a view to learn, would not suit with his failing eye-sight; he must therefore content himself with giving a bare statement of what he has seen, done, or thought of doing: the record is meagre, but authentic.

The doctrines and practices of physicians are, like most other things in this sublunary system, liable to fluctuate and

change. The change which has lately taken place in Great Britain in the manner of treating febrile diseases, particularly in treating the contagious fever known in this country by the name of Typhus, may be termed a revolution. The theoretical doctrine, respecting the nature of the disease, appears to be abandoned ; the practical proceeding is not modified, but literally reversed. Blood-letting, which, twenty years ago, was reprobated as murder—direct or indirect, is now not only admitted among the remedies, but extolled above all remedies. Experience supports the opinion that is given of it. The practice is unquestionably salutary. The Author can bear witness to the good effect; and, though he does not present himself as the person who first directed the public attention to it, he takes leave to say that he has known, since the beginning of the year 1796, that blood may be abstracted, in the contagious fever, with the same safety as in the endemic. In saying this,

he does not pretend to say that blood-letting is indispensably necessary for the cure of the simpler forms of contagious fever. He knows that the disease may often be safely cured without it; but he knows at the same time that blood may be abstracted with safety, and that the abstraction may be so managed as to facilitate and expedite the cure of the most simple:—it is indispensable, to the cure of those that are complicated and aggravated. Blood, it is maintained, may be abstracted from subjects who are ill of contagious fever without apprehension of danger on the score of its being contagious.—This cannot be denied; for it has been fully proved. But, though this be admitted, it is proper to bear in mind that the safety of the practice is assured, the power of the remedy augmented by management. Abstraction may be dangerous, or of no effect, as simple abstraction; it may be rendered safe, and powerful as preceded by, or executed with other compani-

ment; viz. fomentations with hot water, hot steam, immersion in warm water, frictions, and other means which act powerfully and directly upon the surface of the body. It may be observed in this place that, though the action of the cause of contagious fever pervades the system as generally as the action of a febrile disease can well be supposed to do, yet that the force of the action is principally manifested upon one system, or series of parts, in the cutaneous expansions, internal or external. It is a fact which no one will dispute that diseases are cured by subversion of the diseased action at its proper base; it may therefore be presumed that it is most speedily and most effectually cured by applications which act directly and immediately upon the series of parts affected; that is, the exhalants of the skin. The Author has kept this point in view in his practical proceeding; and he takes leave to say that, if there be any thing use-

ful or peculiar in the present work, it is chiefly on that head that it is to be found.

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CHAPTER I.

Summary of Histories.

IN analyzing the history, and in adjusting the place of the remedies that have been applied to the cure of contagious fever, I only state what has occurred within my own observation. As individual observation constitutes the basis of my work, I conceive it to be proper to give preliminarily, a history of the field, from which the materials on which I build my system were drawn, so that the reader may have it in his power to ascertain their authenticity, and to estimate their value on just grounds, as applicable to common practice; the experiments were principally made upon the military, which is in some manner, an insulated class.

SECTION I.

Summary of the Medical History of the 3d Regiment of Foot, or Buffs, from the Month of November, 1793, to the Month of April, 1795, with Cursory Remarks on the Medical History of the British Army, in its Retreat through Holland, &c. in the Years 1794 and 1795.

It is here proper that I apprise the reader, that I joined the 3d regiment of foot, in the month of October, 1793, in quality of surgeon. That regiment, like most of the infantry regiments in England, has been recently augmented by recruits, from a levy raised by companies, under the name of *Independent*, and like most of the others, it had suffered, more or less, from fever, during summer and the early part of the autumn. It was embarked at Portsmouth early in October, as part of an armament about to be dispatched to the West Indies, under the command of Lieutenant-General Sir Charles Grey. It was detained at Spithead after embarkation; and a project having been formed in the mean time of invading, or of making a demonstration of invading the coast of France, the Buff, in exigence, was transferred to this service, the execution of which was intrusted to the Earl of Moira. The expedi-

tion, under Earl Moira, left Spithead, reconnoitred the coast of France at a distance, and perceiving no signals of friendly reception, it cast anchor in the road at Guernsey, where, after remaining for some days, it returned to England—to Cowes, in the Isle of Wight, before the end of December. The seeds of disease, which were comparatively dormant while the Buff remained at Spithead, became active before the end of December; the activity apparently augmented by the preposterous measure of diminishing the tonnage, because the troops were to navigate in seas of high latitude. The Buff was sickly, and scarcely one of the regiments which composed Lord Moira's army, could be said to be healthy at the time that it cast anchor at Cowes. In some of the corps the number of sick was high, the character of the disease contagious, the symptoms sometimes violent. The Buff, 19th and 42d regiments, formed into a brigade, under the immediate command of Major-General Lord Cathcart, were ordered, about the 20th of January, 1794, to Lymington, to be dispersed in cantonments. The weather, during this season, was cold; the winter 1794, was in fact a hard one. Cowes, the place of rendezvous, afforded no means of accommodation for the sick; and as the sick of the expedition were numerous, the hardships were considerable. A mast-shed was all that could be obtained for the hospital of the Buff;

it was open and cold, but decidedly the most wholesome, and even the most comfortable of the places that were obtainable for the reception of sick ; wicker hurdles, which had been prepared for agricultural purposes, were purchased, and laid upon the masts which were at the time in the shed, so that formed into a platform, covered with clean straw, and the clean bedding which had been recently allowed for the corps, as destined for foreign service, the condition of the sick, as to accommodation, was not uncomfortable. Open fire-stoves were placed at different distances within the shed ; but it was not possible, even by the means of stoves, to raise the temperature to pleasant warmth ; the air was, notwithstanding, pure, and the effect upon the health was fortunate. The corps, as already stated, was ordered to Lymington ; and no place being provided for the reception of the sick at that cantonment, fifteen were left at Cowes, which were sent subsequently to the general hospital at Southampton.

Fever occurred only occasionally, in the Buff, until the middle of December ; eruptions on the skin, blotches, or moist itch sores, and spreading ulcers on the legs ; diarrhea, or flux were frequent from the time of embarkation. The febrile form prevailed about the latter end of December, aggravated in symptoms, and so common as to constitute one half of the sick list, during the months of January, February,

and part of March. The corps disembarked from the transport ships at the beginning of February, was quartered at farm-houses, near Lymington—in barns, or other vacant buildings. The cause of the disease, diluted by dispersion, though still continued to act, acted with diminished force, and probably would have soon ceased to act, had not an exigence of service, which occurred about the end of March, occasioned the Buff to be again embarked, in order to proceed to Jersey, which was threatened with an attack from the enemy.

The Buff, the 19th and 42d regiments, formed, as already observed, the brigade of Lord Cathcart. The sick list was high in the Buff, still higher in the 19th; it was comparatively low in the 42d. Besides the brigade of Lord Cathcart, three other brigades, consisting of the 27th, 28th, 54th, 57th, 59th, and 2d battalion of the 78th, composed the force under the command of the Earl Moira. The greater number of these corps were sickly—contagious fever the predominant disease. They were disembarked, and dispersed in quarters in the vicinity of Southampton, where a granary or malt-house was converted into an hospital for the reception of their sick.

The Buff was thrust into the barrack, St. Laurence, on its arrival at Jersey. That barrack is not well contrived, by form of construction, for the preservation of health; and it was

not in fact wholesome at the time the Buff went into it, having been occupied during the winter by the 63d regiment, which, like most others, was in a sickly state. The fever, which had been frequent in the Buff from the time of its arrival at Cowes, appeared to abate in frequency under the dispersion of cantonment near Ly-mington: it was not extinguished. It re-appeared, even acquired force, as soon as the corps was brought together in mass in the barrack St. Laurence, at St. Helier; and it continued to increase in frequency and force, until the cause was diffused and dissipated by the dispersion that belongs to encampment; that is, until the corps was put under canvas about the beginning of May. Besides dispersion implied in the constitution of encampment, the weather was warm, the site of the camp dry, the sea contiguous; sea-bathing was recommended as means conducive to the recovery of health; the practice was enforced, and together with this, a routine of exercises and amusements, (which kept the soldier almost always in the open air during the day,) was instituted, followed up, and with such good effect, that at the end of six weeks, and before the corps was ordered to the Continent, there was not, with the exception of three or four invalids, sent to England to be discharged, an individual in the ranks who was not capable of effective duty.

The disease which prevailed among the

troops of the Earl of Moira's command, was fever of a decidedly contagious character.— There is reason to believe that it was introduced into most of the corps by recruits from the independent companies, many of whom were drawn from jails and manufacturing towns, where the seeds of contagious fever generally exist. In the Buff, which was more immediately under my own observation than any other, cutaneous eruptions, ulcers on the legs, diarrhea or flux, and fever, constituted the principal forms of indisposition. The Buff was sickly, but not the most sickly corps on the expedition: the 2d battalion of the 78th regiment, a corps of highlanders, newly raised, was healthy, at least, without fever.

The symptoms of the fever differed in force and in mode. They were sometimes violent, manifesting irritated and highly excited action in the circulating system, or violent cerebral irritations, tremors, startings, and partial convulsions. These modes of irritation were sometimes general throughout the system, sometimes prominent in the functions of one organ more than another, more fixed or more fluctuating, according to contingency. In this manner, the morbid suffering, conspicuous at one time in the organs of the thoracic cavity, was suddenly transferred to the cerebral; and from the cerebral returned again to the thoracic, either through treatment or by accident. A grim, cloudy, and

bloated aspect of countenance was usually connected with predominant pneumonic symptoms, a wildly rolling eye, delirium, startings and threatenings of convulsion with the cerebral. The course of the disease was usually rapid, seldom extending beyond the seventh day without crisis, or change in the nature of the symptoms.

In others, instead of a mixed and complicated expression of morbid suffering, the force of the disease was chiefly manifested in the functions of the circulating system. The pulse, for instance, was sometimes frequent, quick, and irritated; sometimes little disturbed in order and regularity, but deep seated, and without expansive energy. The heat of the surface was ardent and strong in one; caustic, pungent, and disagreeable to sensation in another—not high, as measured by the scale of the thermometer; the skin in both was thick and inelastic. The duration of the ardent and irritated stage was short, sometimes terminated on the third day, rarely extended beyond the seventh.—Symptoms of irritation and ardency subsided, and the powers of life emerged from a given point of depression, assuming a form of activity which assured crisis; or if this did not take place, they subsided rapidly, and were only prevented from total quiescence, or death, by Herculean means of remedy.

The forms now alluded to occurred some-

times, but they were comparatively rare. The symptoms were ordinarily moderate, the action of the vascular system preternaturally excited, but not inordinately. The skin was frequently tender, or sore to the touch, as if it had been bruised; it was almost always dry—not hot, but hotter than natural. Thirst was considerable—not intense; the tongue was foul, often white and slimy; sleep was disturbed by dreaming and wanderings of the fancy, like delirium; the action of the vascular system expanded gradually, and marks of crisis were perceivable about the seventh day; sometimes the energies subsided about that period, the pulse gradually losing force and expansion, the heat of the surface (particularly of the extremities) diminishing, the blood appearing to stagnate in the venous extremities, presumptively in organs of spongy structure—lungs, liver, and spleen, obviously on the skin, produced petchiæ or lividness on the extremities: the skin was sometimes dry, sometimes dingy, damp, and greasy. Sometimes, instead of crisis at a given period, or marks of commencing retrograde, and tendency to stagnation, the character of the disease assumed another form, proceeding under its new form, through a course of regular febrile development, to termination or change, accompanied, not unfrequently, with delirium, sometimes high and violent, oftener moderate, lively and cheerful. Crisis, or termination, oc-

curred in this case, on the fourteenth, from the commencement of indisposition; on the seventh, from the change noted to take place in the character of the symptoms. Sometimes, instead of crisis, there was only a change in the nature of the symptoms, more or less obscure, the final termination not happening until after another septenary period, sometimes until after several.

Distinct and final crisis did not often occur at an early period. Relapse was frequent; and relapse was always to be expected, when the ostensible febrile act subsided without open marks of crisis, viz. sweat, or other visible and copious evacuations. Where the cessation of fever was unaccompanied by visible and copious evacuations, the course which appeared to have ceased, was often found, when the case was closely examined, to be suspended, rather than finally completed. The disease recurred; ceased, and recurred again, sometimes for four or five different times, the symptoms in relapse frequently, but not always, differing in appearance from those of the original. Diarrhea, or dysentery, was predominant among the forms of relapse: where the issue was fatal, it was the more common mode of termination. Instead of diarrhea, or relapse in distinct febrile form, irregular flying pains in different parts of the body, sudden and unaccountable qualms of sickness, copious puriform expectorations,

threatening pulmonary consumption, not unfrequently harrassed the patient for a length of time.

The mortality of the disease under view, was not great inherently; it became great by crowding the subjects of it into ill-ventilated hospitals. It appeared to be greater among men of a full habit and large size, than among those of slender figure and middle stature. It was thus greater in the grenadier and light infantry companies of the troops collected near Southampton, than in the companies of the battalion. It was also proportionally greater among those beyond forty years of age than under it; and it was greater, in a marked degree, in the general hospital at Southampton than in the different regimental hospitals in the vicinity, notwithstanding their inferior equipment, and probably the inferior skill of the medical officers who conducted them. The Buff lost one man only, out of more than one hundred who were treated in the regimental hospital, between the month of November, 1793, and the month of July following. Fifteen, as already observed, were left at Cowes, to be sent to Southampton; fourteen or fifteen were left at Lymington, to be sent to the same receptacle, when the corps was ordered to Jersey. One-third of these appeared, by the Paymaster's roll, to have died before the 24th of June.

The precise relative proportion of deaths to

discharges, among the sick of Lord Moira's army, is not within the knowledge of the writer. The fact stated, viz. that it was greater in the general hospital at Southampton than in the different regimental hospitals in the vicinity, is correct. The general hospital at Southampton was amply provided with every comfort, except pure air, that sick men could require, and that England could supply. Its chief medical officers were physicians of the universities; its economy was arranged, and its order superintended by a man of experience in the army, and of some reputation in his profession. It is necessary to say this; but it is not said as obliquely implying censure to the physicians or the superintendant-general of Southampton hospital. It is the statement of a fact which, with other similar statements, may, perhaps, in future times, induce those who preside over the affairs of nations, to inspect localities, and to estimate their properties, as relative to health, before they give orders to found establishments for the reception of the sick of armies. I do not consider it as rash to maintain that mortality would have been less than it actually was, if the sick of Lord Moira's army had found no other shelter than the lee-side of a hedge, and no other covering and comfort than a blanket and a jug of water. The assertion is bold; but it is true, and easily understood. A granary, or malt-house of several stories, the apartments

low roofed, imperfectly ventilated, every niche occupied by a sick man's cradle, could not well fail, under the best care and management of the ablest physicians, to become a hot-bed of infection. Such it in fact became. The infection, which was virulent, extended to nurses and attendants. The mortality exceeded the ordinary mortality of the disease, as left to its own course in open air and scattered quarters; and it exceeded it obviously by mistaken care and ill-considered kindness; that is, crowded wards and full living.

CASES

Illustrative of History.

Lymington. Serjeant M—ns, was attacked on the 20th of March, 1794, with symptoms of fever. The symptoms were violent from the commencement; but the serjeant, being at an out-quarter, was not submitted to treatment until the 21st. The head-ache was then uncommonly severe; the skin was tender of the touch; the mind was irritable; the ideas confused; tremors; threatened convulsion. Calomel and James's powders; blisters to the forehead and nape of the neck,—22. Appearances suspicious; febrile heat subsided; the pulse small and frequent; the skin damp and greasy; intellect not clear. The apartment in which the serjeant lies, is close, almost without ventilation.—23. Delirious, nearly insensible; the urine and stools pass involuntarily, or unconsciously; the pulse is scarcely perceptible; the skin greasy, clammy, and of a dusky colour; the lips pale; the countenance collapsed and inanimate; the eye languid and sunk. He was brought from his apartment to the hall; the hands, face, and breast were washed with cold water;

laid upon straw, in a wheel-barrow, he was moved through the open air to some distance. He recovered recollection, and spoke feebly; he was convalescent in a few days. He relapsed on the passage to Jersey—the symptoms severe, but less threatening than those of the original attack. Washed with cold salt water—refreshed. A severe griping pain came on in the course of a few hours, followed by copious stools, mixed with blood, as if from the rupture of blood-vessels. The fever ceased; the recovery was rapid and perfect.

Lymington, March 2, 1794. Sergeant Brown, aged thirty, of an athletic form, and florid complexion, attacked in the morning of the 2d, with head-ache of uncommon severity; severe pains of the limbs and joints; general feelings of distress, with considerable tumult and irregularity in the action of the vascular system.—3. The violence of the symptoms increased; the countenance grim and cloudy; the tongue white and slimy; the pulse quick, frequent, and irregular; the skin hot and dry; the respiration heavy and oppressed; anxiety, restlessness, apprehension of danger. Blisters to the forehead and temples: Calomel and James's powders. The head-ache somewhat relieved in the evening; the body opened; the skin still dry.—4. The symptoms abated; the head-ache severe; the eye stares wildly; delirious during the night; startings, tremors, convulsive twitchings; breathing oppressed; countenance overcast. Blisters to the head, chest, and neck; bark, snake-root, camphire, James's powders, and calomel, in large doses: extremities fomented with flannels wrung out of hot water; the face and upper parts of the body washed lavishly with water from the pump. Evening, somewhat relieved; the skin softer, and less hot; delirium moderated; pain of the head and oppression at the chest relieved, not removed: the two last symptoms alternate, in some degree, with each other.—6. More promise of safety; the pulse opens and expands.—7. Better—no decided crisis.—9. Crisis distinct.—There was no relapse in regular febrile form; but there were frequently, for at least six weeks, recurrences of un-

pleasant feelings, and at one time, appearances which gave suspicion of impending consumption in the lungs:

Lymington, February 10, 1794. John Jackson, private soldier, attacked on the 10th with severe head-ache, excruciating pains in the limbs, pains in the side, &c.; the pulse quick and frequent; the heat considerably above natural; the skin dry; the tongue foul; thirst urgent. An emetic was given as soon as he was brought to the hospital, followed by a dose of calomel and James's powder; blisters were applied to the forehead, temples, and neck.—11. Considerably relieved: towards evening, difficulty in breathing; pains in various parts of the body; agitation, tendency to convulsion.—12. Bad night: breathing difficult; the pulse intermits.—13. The pulse small, intermitting; the eye and countenance express something to the observer, of which words can convey no adequate idea; urinary discharge suppressed, with sensations of severe pain in the urinary organs.—14. Bloody urine in great quantity; the pulse natural; the skin soft; the crisis evident. This man had two relapses of fever; the symptoms in the relapse of the same kind as those of the original, but less violent in degree. The critical period was marked by suppression of urine; the crisis accompanied by a copious discharge of blood from the urinary passage.

Jersey, May 10, 1794. Cummins, a grenadier of large size and gross habit, on the eve of being dismissed from the hospital, where he had been for some time, on account of an ulcer on the leg, was attacked suddenly with symptoms of fever, which (having no duty to perform) he concealed from the medical officer until the third day. When brought to the fever ward, the pulse was quick and frequent; the head-ache severe in an extraordinary degree; thirst great; heat of the skin ardent, deep, or concentrated; the skin itself dry, and, as it were, compacted—somewhat livid or marble at the extremities. The countenance was dark and cloudy; restlessness, jactitation, total want of sleep, with partial twitchings of spasm, were conspicuous. Laxatives,

sudorifics, antimonials, camphire, opium, &c. were given freely, but without benefit. The pulse, on the morning of the sixth day of the disease, was frequent in time, weak in strength, and sunk, as it were, in the arm. The heat of the skin was less than natural; the surface of the body tender of the touch, as if it had been bruised; the eye and countenance heavy and inanimate; the intellect confused with subsultus, &c. Wine was given in great quantity; the coldness of the skin, notwithstanding, increased; the pulse retired from the surface, or appeared to contract itself. Ten grains of ammonia, one drachm of bark, twenty grains of powder of snakeroot, were made into a bolus, with one grain of opium, and given at intervals of two hours, washed down with a wine-glass full of Geneva. The body was washed frequently with cold salt water; and blisters were applied to the neck and extremities. The pulse became strong, full, and open; the skin warm, even hotter than natural; the countenance animated; the eye expressive; startings and twitchings still continued. During the seventh, eighth, and ninth, the ideas were clear, the eye and countenance animated, the pulse strong and full, the skin warm, the surface dry and thick—preternaturally constructed. During the tenth and eleventh, the countenance lost somewhat of its animation, the eye of its vivacity, the startings and twitchings were less frequent, and less expressive of power: the course was, upon the whole, retrograde. Death occurred on the twelfth, suddenly, though not unexpectedly, by convulsion. The body was not opened.

The 3d regiment of foot was ordered from Jersey in the summer, 1794, to join the army on the Continent. It embarked at St. Helier in the latter end of July, and arrived at Bergen-op-Zoom, in Brabant, after a passage of eight days. When the Buff arrived at the Scheldt, it was in perfect health, there not being a per-

son belonging to the ranks incapable of duty, at the time of disembarkation. Liquor was easily procured at Bergen-op-Zoom, and intoxication was general on the day of landing, as if it had proceeded from a regimental order. The intoxication produced, as might be expected, a disorderly scene at the time; and the effects of it were visible next day, on the march to Rosendaël, where the main army was encamped.

The British army had now commenced a retreat. It was in daily expectation of being pressed by the enemy; and it was judged proper, under that expectation, to send every person, who was unfit to keep his place in the line of march, or to act in the field, to a sick depôt in the rear. It was scarcely to be expected that a regiment like the Buff, awkward and inexperienced, as entering upon its first campaign, could remain many days without furnishing recruits for the sick depôt. It happened as might have been expected; the Buff, previously to breaking up from Rosendaël, was under the necessity of sending thirteen men to the general hospital at Rhenen, not one of them seriously ill, but all of them unable to continue in the line of march, and perform the duties that might fall to the lot of a soldier, under retreat in the face of an enemy. This practice, which began at Rosendaël, was repeated in every change of position; from the effect of it a hundred and sixty of the corps were found in the list of

the general hospital before the middle of November.

The British army passed the Maes, about the middle of September, prior to which, those of the Buff, who had been sent to the sick depôt, had been sent chiefly on account of accidents, or slight indispositions, which incapacitated them from continuing in the line of march of a retreating army. The army, having passed the Maes, took a position on the heath of Maek, on the 22d of September. On the next day, between sixty and seventy persons, fifteen of them belonging to the company of light infantry, appeared in the sick report, the disease distinctly fever.

The symptoms of this disease were violent from the commencement. The head-ache came on suddenly, and it was generally of great severity. The eye was hot, painful, and shunned the light ; the countenance was flushed, cloudy, and grim ; the sensation of pain in the loins and limbs was grievous, similar to the achings commonly noticed in the cold stage of intermittent fevers, frequently accompanied with sensations of gnawing or tearing of the flesh, particularly at the shoulders and arms. The skin was generally dry, and tender of the touch ; the heat sometimes ardent and particularly pungent. The pulse was insidious, sometimes tumultuous and irregular, sometimes little changed in point of frequency or order, but deficient in energy, elasticity, and

expansion. The tongue was usually white and slimy; nausea and squeamishness were common; vomiting occurred sometimes; thirst was irregular; sleep altogether wanting, or disturbed by frightful dreams. Costiveness or obstinacy in the bowels occurred on some occasions; purging, simulating dysentery, prevailed in others; convulsive or spasmodic twitchings in the limbs; tremor, starting, difficult respiration—continual, or alternating with pain in the head, &c. were not unfrequent.—This form of disease, though it did not terminate by intermission at regular periods, like fever of endemic origin, was, notwithstanding, disposed to subside in three or five days; it rarely extended to seven. Relapse occurred after a short period of convalescence; and after a continuance of a few days, it again subsided or ceased. In this manner, recurrences of fever, and suspensions, alternated at short intervals for several weeks; when health was re-established, or a local form of disease, generally the dysentery, got permanent possession of the field.

The Buff was detached from the encampment at Maek in the latter end of September. The subjects of the fever now alluded to, two-thirds of whom were not yet sufficiently recovered to undertake a service which required exertion, were sent to Nymegen, and from thence to the great hospital at Rhenen. The Buff remained on detachment at Nysterich, Bâthenburgh, and

Graaf, for upwards of three weeks. It returned to the army on the 20th of October, and encamped on the glacis of Nymegen, with a sick list of no more than nine persons, none of them seriously ill. From the 20th of October until the 7th of November, when the army crossed the Waal, after sustaining a short siege in Nymegen, every person who was indisposed, so as to be unable to do the duty of the garrison, was sent to an hospital in the rear, as to a place of safety.

The British troops were withdrawn from Nymegen on the 7th of November. The Buff, the 40th, 55th, 59th, and 79th, were encamped near Lent, on the right bank of the Waal. The position was supposed to be safe, as a military position; and, as such, it was supposed to be a position for the winter. The ground upon which the Buff was ordered to encamp, was ploughed field, or meadow—the surface flat. Rains were frequent during a great part of November, consequently the ground of encampment was partially under water; it was always mire. The tents and huts did not afford sufficient protection from the falling rain; the supply of straw for the bed was scanty; and when procured it was soon spoiled, in a miry soil. Frost set in early in December; it was intensely severe. The sick of the Buff, instead of being sent to the general hospitals at Arnheim, or Rhenen, were received into a barn

contiguous to the encampment. The barn was capacious, and clean straw was supplied in abundance.

The sickness, which had increased in the army with the progress of the season, spread rapidly in the Buff and other regiments that lay contiguous to Lent. In the short period of six weeks, one hundred and fifty persons, from a corps of about three hundred rank and file, entered the regimental hospital under one form or other of the fever then prevailing among the troops. The Buff was ordered to break up from Lent on the 31st of December; and, as it was ordered upon service of alert, the sick, amounting to forty-five, were sent to the general hospital—to a house on the north side of the Rhine, within two miles of Arnheim.

The disease, as it appeared among the soldiers of the Buff, while they remained encamped at Lent, exhibited considerable variety, in form and intensity; but, however varied, it manifested the contagious property in all its forms. In some, the attack was sudden, the pain of the head distressing—rending, almost intolerable—the more common seat of it the forehead, immediately over the eyes. The eye itself was cloudy and confused; the countenance dark and grim; the skin generally dry, sometimes purplish or marbled; the heat great, more properly ardent and caustic; local pains severe, seldom fixed. Shooting pains often proceeded

along the shoulders and arms in succession, rapid in their course as an electric explosion; aching pains were sometimes irksome in the lower limbs and joints, similar to the aching pains that are common in the cold stage of the more malignant forms of intermittent. The skin was frequently tender—impatient of the touch, or of pressure. The pulses of the heart and arteries were irregular, sometimes irritated, sometimes torpid, or unenergetic; the tongue was white and slimy, sometimes of a leaden colour, and swollen, but not foul; thirst was variable; nausea and squeamishness common; actual vomiting rare. Tremors, startings, or spasmodic twitchings occurred frequently; sleep was wanting, or disturbed by dreamings and wanderings, approaching to delirium. Pneumonic symptoms were not unusual; they fluctuated, and frequently alternated with spasms, delirium, or coma. The symptoms now noticed, discovered themselves in the more intense degree at the commencement, and continued for the most part, in a high degree of intensity until the third, fifth, and sometimes the seventh day; when they subsided, rather than terminated. After a few days of suspension, under an aspect more or less promising, fever recurred, sometimes similar, sometimes different in the nature of its symptoms from the original; sometimes of the same, sometimes of different duration.

In other forms of the disease, and upon the whole, in the more numerous, the pulse, differing little from natural in point of time, was deficient in energy and expansion; the heat, moderate in degree at the extreme surface, and on the extremities, was often sharp and pungent at the præcordia, on the trunk of the body, and even on the extremities, as closely pressed by the hand. The skin was often dry and arid; sometimes flaccid and withered; sometimes clammy, greasy, and dusky in colour; it was generally tender of the touch, or impatient of pressure. The aching pains in the limbs were often distressing; the pain in the head was ordinarily moderate, viz. confusion and muzziness, rather than actual pain. The tongue, as clean and moist, in many cases, differed little from natural during the first days of the disease. It was sometimes smooth and pale, sometimes rough and moist, the roughness adhering firmly to its substance. A black crust or sooty pellicle, sometimes moist, oftener dry, covered its surface, not unfrequently at late periods; sometimes the surface was smooth, glossy, or shining as if it had been covered with a coat of varnish; in such case, it was usually dry, even parched. The disease, under the form now described, rarely ceased, or changed materially the tenor of its proceeding, before the seventh day. It then sometimes terminated critically; sometimes changed character and

run over a course of similar duration as the original, distinguished, for the most part, by marks of vascular excitement, general expansion in the extreme vessels of the surface, and more or less of mental derangement.

The forms now cursorily marked, present an outline of what was most common in the Buff, during the time of its encampment at Lent. Besides these, pneumonic and dysenteric forms were frequent; the first, as original; the second, sometimes as original, oftener as secondary; that is, as the mode assumed by the action of the morbid cause in relapse.

The Buff moved from its encampment at Lent on the 1st of January, 1795, the sick, as already stated, having been previously sent to an hospital in the vicinity of Arnheim. The great rivers were frozen; and the threatening movements of the enemy kept every part of the army in a state of alert. The Buff, among others, marched and countermarched between the Waal and the Rhine day after day during the first ten days of the month; and, notwithstanding daily change of position, and an extreme intensity of cold, no material abatement was observed in the rate of the sickness. From the 1st to the 20th, about forty persons were sent to hospital from a corps under three hundred rank and file. From the 20th, when the division in which the Buff moved arrived at Deventer, waggons were provided, whether

hired or pressed, to carry sick and other incumbrances in the train of the respective corps; and, in consequence of that measure, the Buff ceased to send its sick to the general hospital when ordered to march. The weather was now excessively cold, the frost intense, or under thaw. The travelling was slow, on account of the badness of the roads: and, as the journies were sometimes long, the waggons, with the sick, did not always arrive at the quarter before dark. A barn was the common place of accommodation, necessarily without fire, but ordinarily well stored with clean straw. During the march from Deventer to Bremen, that is, from the 20th of January to the beginning of April, the list of sick, partly owing to the accession of stragglers from the general hospital, which was also on the route, was seldom, during the first six weeks, under thirty, often above it. At the beginning of April, when the corps arrived at Bremen, two persons only were sent to hospital, as unable to walk to Bremenlehe without assistance.

The above sketch comprehends a summary of the medical history of the 3d regiment of foot, during its service on the Continent, from the month of August, 1794, to the month of April, 1795. The medical history of the British army, in the retreat from Antwerp to Bremen, is a history of some importance. It furnishes points of information deserving the attention of states-

men and generals, as well as physicians who superintend the medical concerns of armies. Contagious fever, whether introduced into the army at the beginning of the war 1793 by improper modes of recruiting, and by carelessness in the manner of incorporating recruits into healthy regiments, or otherwise generated, was rendered virulent by accumulating the subjects of it into receptacles called general hospitals. From these the seeds of disease were sent forth, and diffused widely through the army by ignorance or inattention; that is, want of knowledge of the principles of military economy, or disregard of the manner of applying them. Contagious fever prevailed generally among the infantry, in a degree equal, and even higher than what has been noticed, in the Buff; it was scarcely known among the cavalry, though the cavalry lived in the same atmosphere, and partook of the same service with the infantry. The Netherlands, the field on which this sickness occurred, is a level country, interspersed with sandy heaths and muddy swamps, sluggish rivers, ditches and canals of stagnant or slow moving waters. Fever—intermittent or remittent, is endemic and common among the native inhabitants, at certain seasons of the year; it is more common and more severe among strangers. It appeared in two or three instances among the officers of the Buff; a distinct intermittent was not observed in one

instance among the men, But though the disease, as it appeared among the rank and file, was not, strictly speaking, of the distinct intermittent type, it had, notwithstanding, a disposition to subside, after an interval of three, or five days, or more ; and to return again in a few days by relapse, but not as ague and fever.

The prosecution of the war on the Continent appearing to be a hopeless pursuit, in the year 1795, the British infantry was ordered to return to England ; but, as the enemy was in possession of the sea-ports in Holland, it was under the necessity of directing its course through Germany to Bremen, in order to embark at Bremenlehe, on the Weser, where the transport ships had been ordered to assemble. As the necessity of this measure had been foreseen for some time, a range of wooden building was erected at Bremen, on the outside of the ditch, preparatively for the reception of the British sick. The building was capable, according to the close manner in which sick soldiers are usually packed, of containing six hundred men ; and more than that number were at one time within its walls. The writer of this analysis left the 3d regiment of foot at Bremen, to join the general hospital staff. He joined and took charge of one of the fever wards ; but having been selected to make arrangements for the embarkation of the sick, which were ordered to

be removed to England, he proceeded to Bremenlehe in a few days for that purpose, and of course had only a short opportunity of observing the proceedings in Bremen hospital. Some detachments of sick arrived at Bremenlehe, and were put on board of the vessels allotted to the hospital department; but the tonnage of shipping required for the transport of the army, (horses and baggage,) having been miscalculated, it was found necessary to disembark them, and disperse them in cantonment in the neighbourhood, until a sufficiency of craft should arrive from England for their transport across the seas. The sick of the army, amounting to about seven hundred, were collected at this place, and quartered at three different villages, within a circle of ten miles. Of these, Dorum, the largest, the last occupied, and the one where the writer was stationed, may be said to have received the gleanings of the hospitals of the Continent. The barns and vacant houses, appropriated to the reception of sick at this place, were good; clean straw and wholesome provisions were supplied in abundance; and the season of the year was favourable. The number of sick amounted to two hundred and twenty, their condition miserable in the extreme: the majority covered only with rags, over-run with vermin, the person encrusted with dirt, emaciated to the last degree of emaciation by dysentery, or fever in dysenteric form; many so weak as to be

totally helpless, some speechless and insensible, others delirious; a few insane, but advancing progressively towards the recovery of bodily health.

The misery of the scene was great; the means of relief inadequate. There were no hospital stores, that is, bedding and clothing; and the village of Dorum could not produce more than fifty new blankets. It was uniformly the first object, in this scene of distress, to remove the infected rags from the diseased subject, to wash his body with soap and water, to lay him in clean straw, covered with a clean blanket, or the best clean covering that could be procured. The washing of the body, and changing of the straw, as practised every day, afforded full occupation to the attendants—the orderlies to do it, and the medical officers to see that it was done. Those who were employed on this service, and those who washed the shirts and blankets, incurred great risk of their health; for the contagion was concentrated, and at one time active in an extraordinary degree. By perseverance in employing the means stated, imperfect as they were, the contagious property of the disease was weakened; and at the end of one month, every person sent to Dorum, except about thirty who died, was in a condition to be sent to Bremenlehe, in order to be embarked for England, in a state which might be fairly called convalescent.

As the sick stationed at Dorum consisted chiefly of such as were in the latter stages of disease, instances of recent fever were only found among nurses, orderlies, and washers. They were not numerous; but they were, as might have been expected, of the most aggravated kind. The mode of attack was often sudden; viz. sudden giddiness, swimming of the head, even stupor like deep intoxication, or apoplexy. The pain in the head was often intense, particularly at the forehead, over the eyes; pain, with sensation of burning heat in the eyes, was common; sometimes vision was obscure, without heat or pain of the eye, but with an idiot-like expression. The countenance was agitated, grim, and cloudy, or livid and inanimate. The pulse was sometimes tumultuous, irregular, quick, and frequent; or frequent, oppressed, and small. The heat was sometimes ardent, and caustic, sometimes not greater than natural; the skin was sometimes, indeed often dry; sometimes clammy and damp. A sense of stricture on the chest, with oppressed breathing, was not uncommon; it alternated, on several occasions, with delirium and affection of the head. The tongue was white and slimy; sometimes foul and leaden coloured; seldom dry at the early stage; sometimes covered with visced saliva. Where the disease commenced with oppression or stupor resembling deep intoxication or apoplexy,

death took place in thirty-six hours or less. Where fever declared itself obviously after apoplectic invasion, the febrile symptoms often subsided on the third day, without marks of crisis. The countenance remained clouded : a febrile attack recurred on the sixth, or earlier, and run over a course of uncertain duration, with more or less danger to life. If the febrile symptoms, in whatever manner the fever might begin, continued to advance progressively until the seventh, the termination was often favourable and final ; sometimes symptoms of a different cast from the preceding, arose at that period, and proceeded through another septenary course, to terminate finally, or to change form and go on to an uncertain issue.

The infantry of the British army was withdrawn from the Continent, as now stated ; the cavalry remained for some months cantoned in the neighbourhood of Bremen. The cavalry, as already observed, experienced little or no sickness during the retreat ; and, even at the beginning of September, 1795, when the writer of this analysis returned to England, no acute disease was noticed in any part of it. An authentic fact, and one which, contrasted with the deplorable condition of the infantry, furnishes a subject of important reflection for those who superintend the great affairs of the state, and the more immediate concerns of armies.

CASES

Illustrative of the History of the Fever which prevailed among the Troops on the Continent, 1794 and 95.

Lent, December 26, 1794. Murphy, sergeant at the regimental hospital of the Buff, was attacked in the evening with symptoms of the prevailing fever. The attack was marked by chilliness and horror, severe aching pains in the limbs, joints, and particularly at the shoulders, and in the arms; head-ache was violent to an unusual degree.—27. Restless during the night; the heat of the skin ardent; the countenance dark and clouded; the tongue white, slimy, and moist; sensations of pain shoot off irregularly from the shoulders along the arms, sudden as electric explosion.—28. The skin dry; the heat caustic and strong; the pulse frequent and quick, without force; the countenance grim; the head-ache severe. Emetic, purgatives, diaphoretics, blisters; no material benefit.—29. Restless during the night; now distressingly ill; taken from bed, washed completely with cold water; the temperature of water at the freezing point. The pains of the head and other pains were assuaged immediately; the countenance brightened up as with new light; the skin lost its disagreeable causticity, the surface becoming soft, warm, and temperate; the tongue continued white and foul.—30. Better.—31. Improving; no return of fever; no appetite for food. The regimental hospital being ordered to break up on the 31st, Sergeant Murphy was sent, with others, to a house near Arnheim; and he improved so much while on the route, that he might be considered as convalescent when he arrived at his destination.

Dorum, April 15, 1795. Captain Dr——d, an officer of the Guards, stationed at Dorum for the purpose of enforcing discipline among the hospital servants, should military interference be necessary, urged by zeal of duty, and kindness of nature, to enter the sick quarters frequently, was attacked,

soon after his return to Bremenlehe, with giddiness, dimness of sight, head-ache, horror, shivering, and other symptoms common at the commencement of the more violent forms of contagious fever. During the first six days of the disease, anxiety of stomach, indescribable distress of feeling, irregular pains and spasms in different parts of the body, sensations of stricture on the chest, irritability and uneasiness in the bowels, whiteness and foulness of the tongue, a grimness and cloudiness of countenance, dryness and harshness of the skin, pungency of heat, frequency and quickness of the pulse, were the more prominent symptoms in Captain Dr——d's case. On the sixth, evacuations from the bowels took place to the amount of twelve or more, in consequence of calomel and James's powder. There being some alarm on account of the excess of the purging, blisters were applied to the nape of the neck and other parts of the body. Seventh: paralysed; incapable of helping himself; the intellect clear. Eighth: instead of anxiety, restlessness, pains, spasms; clouded aspect and distress at stomach; the mind is cheerful, the features animated, the eye bright, the ideas gay, lively, even extravagant. The pulse develops; the skin becomes soft and moist; the covering, formed upon the tongue, separated at the edges as the course advanced. Sleep was sound; and though there appeared much mental derangement when awake, the action of the system acquired vigour upon the whole, and marks of crisis were evident on the fourteenth from the commencement of indisposition, on the seventh from the change in the nature of the symptoms. The recovery was progressive, but not rapid.

Dorum, April 30th, 1795. Morton, employed as ward-master, in the most infected sick quarter of the station, and, as such, spending the whole of his time in what might be termed a focus of infection, was attacked in the morning of the 30th with giddiness, shiverings of cold, pains, unpleasant achings in the limbs, and head-ache of extraordinary severity. In the course of the day, when the disease might be considered as having assumed its proper form, the tongue was

white, slimy, and foul; the countenance grim and clouded; the eye glossy and staring; the heat of the skin deep seated, (so to speak,) and of pungent impression; the skin itself thick and dry—unpleasant to the touch; the pulse quick, more frequent than natural, but not frequent as a febrile pulse. Emetic; blisters to the forehead, temples, and nape of the neck; calomel and James's powder.—May 1st. The symptoms are less pressing; the skin is still dry, and the pulse is deficient in energy and expansion.—2. The febrile symptoms subsided; no crisis; the countenance still dark and grim; the eye white and pearly.—3. Something like improvement; no confidence of restored health.—4. No marks of formal disease; appearances suspicious.—5. Morton went to Bremelehe, in order to embark for England. He was attacked with fever on the 7th. I did not see him until the 12th. He was then very ill: the countenance was grim, tending to livid; he was delirious, and considerably convulsed.—13. The convulsive twitchings have ceased; the head is clear, the pulse full and expanded; the countenance calm and comparatively bright; the tongue clean at the edges. The febrile commotion has ceased; but it appears to have ceased through an explosion of gangrene on the extremities, viz, blackness of a deep shade, from the toes to the calves of both legs, circumscribed, as if the parts were incased in a pair of half-boots.

Dorum, April 23, 1795. B——1, employed as an attendant upon sick at one of the hospitals at Dorum, was seized suddenly on the 23d with symptoms of uncommon violence. The pain in the head was unusually severe; convulsive and spasmodic twitchings frequent and strong; heat caustic and pungent; pulse quick, irregular, and frequent; anguish at stomach distressing; respiration deep and laborious—interrupted with sighing; the aspect of countenance grim and clouded. An emetic, given soon after the attack, was followed by a purgative; blisters were applied to the back, and Dover's powder was given at intervals of eight hours.—26. The symptoms nearly the same in kind as on

the first day—aggravated in degree. The breathing is heavy and oppressed; the eye red—the veins turgid; the countenance dark and grim; the skin dry; the heat pungent and strong; startings, tremors, and convulsive twitchings recur frequently—mental irritation great. A powder, composed of ammonia, James's powder, opium, snake-root, and valerian, was given every two hours, washed down by half a gill of port wine, or a glass of brandy; blisters were applied to different parts of the body; the extremities were fomented with flannels wrung out of hot water; the rest of the body washed with cold water from the brook. Perspiration became general in a few hours; the violence of the symptoms abated; signs of crisis were in fact soon visible.

Dorum, April 16, 1795. P——n, an attendant on sick in one of the hospitals at Dorum, went out at dusk for the purpose of lighting a candle, and returning in a few minutes, staggering and stupid as if he were dead drunk, and being supposed to be so by his fellow-servants, he was concealed from the medical officer until next morning, when he was speechless and comatose; the pulse sunk, nearly extinct; the skin purplish, cool, and clammy. He died in less than thirty hours from the time of the attack.

The writer of this analysis had been employed in superintending the concerns of the sick that were collected at Dorum; and, as the duty of superintendence consisted chiefly in seeing that the persons of the sick were washed, and that the straw on which they lay, was changed once a day, he usually spent ten or twelve hours of the twenty-four in one ward or other, often in contact with the persons or clothes of those who were ill of fever. The impressions of an atmosphere loaded with exhalation from the bodies of sick men, were disagreeable at the time. The

effect was counteracted by the frequent employment of emetics or purgatives; and apparently by these means, the actual occurrence of fever was averted during the time he remained at this place. When the sick were embarked at Bremenlehe in order to be conveyed to England, the writer repaired to Bremen, where his station was, in actual good health, and, as relieved from an unpleasant duty, in good spirits. For two weeks after arrival at Bremen, and three after taking leave of Dorum, his health was unimpaired. At the expiration of the third week, giddiness, confusion and pain of the head came on suddenly, one evening as he was walking in the street. He gained his quarter with difficulty; the pain was intolerable, when he coughed, walked, or moved the head; at other times it was little troublesome. It was felt at the back part of the head, at the place occupied by the *medulla oblongata*. The pulse was little disordered; thirst was not great; and desire for food was not altogether wanting. A blister was applied to the nape of the neck; and some other things were done, of no great importance. The pain was moderated—not removed. It continued until the seventh day, when it ceased suddenly, leaving a sensation of lightness and confusion which did not wear off for some time. This is the sum of the case; it is not given as a case of fever in regular form; it is merely noted as an indisposition,

which most probably, indeed, which almost to a certainty, owed its origin to the influence of the contagion which prevailed in the sick quarters at Dorum, during the time the writer was employed in attending the sick that were collected at that place.—Numerous analogous examples might be produced in illustration, if necessary, that partial derangements, in particular organs, arise as the effect of the application of a general febrile cause.

The form of febrile disease which prevailed in the 3d regiment of foot, and which prevailed more or less in all the infantry regiments then in Holland, varied according to the circumstances of original temperament, and more expressly according to the nature of the artificial circumstances under which the subject happened to be placed. It sometimes commenced, especially in the month of September, in the form of colic, or cholera of excruciating severity; sometimes in form of dysentery;—the characteristics of fever were not immediately developed. The disease, in so far as it fell under the observation of the writer, had a tendency to act during the first seven days, on the sentient system, producing agitation, tremors, startings, disturbed sleep, dreamings, wanderings, more or less of delirium, and often more or less of gastric distress. The tenor was more uniform in the subsequent period, whether by vascular expansion, or vascular collapse. In not a few instances,

mental alienations, like insanity, continued for some time after the bodily health was restored. The mental alienations were oftener lively and pleasant reveries than violences, outrage, or despondence. Some persons actually destroyed themselves, when under the influence of the fever, and several attempted to do it. The propensity to commit this act was conspicuous chiefly among persons of enlightened mind, and high sense of honour. Instead of being connected with melancholy and fear, it was usually accompanied with high spirits, and an impression that the act, which they were so desirous to execute, was an act imposed upon them by the command of a superior—to be executed in honour as a duty. The modes of this hallucination were various. Several of the insane followed in the train of the hospital waggons; and, among others, a staff surgeon, who had been extremely ill, and whose recovery was for some time doubtful. This person regained his bodily health, but being a man of a military turn of mind, he remained under the impression that he was Frederick King of Prussia, conducting an army in retreat. He rode on horseback, accompanied the waggons with the sick, and so strong was the conviction of his mind of the reality of his assumed office, that he refused to enter his quarter until he reconnoitred the position, and according to his own idea, placed his posts and picquets. The wea-

thier was now excessively cold; and, in one of the coldest days in January, he was so impressed by its extremity while on the march, that, on arriving at his quarter, half frozen, he went into the house without reconnoitering, and from that day, giving up his military command, resumed his medical duty. Instances of extravagance of a similar kind were not rare. Where they occurred, life, in so far as my experience goes, was comparatively in little danger; but, when I say this, I must caution the reader not to confound mental hallucinations with febrile delirium, which is never without suspicion of danger.

The symptoms of the fever, which prevailed among the troops on the Continent, in 1794 and 1795, were sometimes violent at the commencement, oftener perhaps, mild in appearance, or without much vascular commotion. The skin was generally dry, not unfrequently tender of the touch, so that the patient complained when the arm was laid hold of for the purpose of examining the pulse, particularly where pressure was applied to it for the sake of ascertaining the force of the pulsations; while tender of the touch, it had something of a dark erysipelatous hue, particularly on the extremities. The pulse differed little from its natural state in many instances, except, perhaps, in deficient energy and impression. The tongue was generally rough, but not foul; the natural secretions

and excretions did not appear to be materially changed ; the symptoms were, in fact, moderate in degree ; the course slow ; the crisis imperfect. Distinct paroxysm and remission did not belong to the disease : there were, however, risings and fallings in the intensity of the action at particular times, the fallings sometimes marked by copious hæmorrhage from the nose, or other part ; not often by copious perspiration, or other copious excretion. This was not uncommon ; and it was further observed that, where the febrile course ceased, it oftener ceased by conversion upon a particular internal organ, or system of parts, than by open, clear, and distinct crisis through the skin, or other excretive emunctory. Mental hallucination was not unfrequent as one of the modes which the febrile course assumed at a certain stage of progress ; pneumonic excretion, resembling an excessive mucous catarrh, occurred sometimes ; conversion upon the mucous membrane of the intestinal canal, was the most frequent of the modes, and the most important on account of its dangers. Conversion of the febrile act into a form of mental derangement was considered, for the most part, as a sign of returning health ; conversion upon the intestinal canal, was always dangerous ; and, according to the then circumstances of the army, viz. travelling in open waggons in cold and wet weather, or bad roads and with bad accommodation at

night, not unfrequently fatal. In subjects who were thin and emaciated by the effect of dysentery, even though ranked among the class of convalescent, the occurrence of a night of severe frost generally made a remarkable increase in the column of dead. Where the febrile act was such as may be termed general, or where it was fluctuating and changeable in its nature, gestation in the open air, under all the drawbacks of an inclement season, was generally observed to be beneficial; where the act was local and permanently fixed, as in chronic dysentery, it was almost always injurious. In barns and other buildings converted to the purpose of hospitals, provided the external air was admitted freely, and the apartment was not overcrowded, the symptoms of the fever were frequently violent; the mortality was comparatively inconsiderable. In close buildings converted to the purpose of hospitals, crowded with sick, and so constructed that the current of external air could not be brought to sweep the floor on which the sick lay, the symptoms were often apparently little violent; the mortality was notwithstanding, comparatively great, the fatal termination frequently sudden and unexpected. This fact was often exemplified; and it was so distinct that no doubt could remain in the mind of any one who took the trouble to reflect, that the sick of crowded and ill-ventilated hospitals, with every advantage of professional skill, and every

comfort that a liberal hospital administration can supply, were less tenacious of life; that is, died in proportionally greater numbers than those who were sheltered in barns and sheds, even than those who were exposed to inclemencies of weather, who had little assistance from physicians, and who had few refreshments or comforts to sustain them.

It was mentioned above, that an order was given at an early period of the retreat, that every person, who was incapable, through sickness or accident, of maintaining his place in the line of march, should be sent to an hospital or depot in the rear. Of these depots, the largest was at Rhenen, on the north bank of the Rhine; a considerable one was at Gorum, on the Maes; Nymegen on the Waal, Arnheim on the Rhine, and other places contiguous to the rear of the army, were occasionally occupied by sick. Besides the land depots, a considerable number of sick were collected on board of ships at Schevingdaal, near Dordrecht. The sick were often conveyed to the depots, in *brijlanders*, which are close-decked boats for inland navigation. These vessels were merely holds for stowage of goods; and, as employed for the transport of sick, they were sometimes condemned, in defect of room on shore, to retain the cargo; that is, to become hospitals. When that was done, the mortality was great, almost total of those embarked.—The right bank of

the Rhine was finally abandoned about the middle of January, 1795 ; and, there being no permanent depot in Holland after that period, the sick and invalid were scattered every where on the route to Embden and Bremen. A considerable number were embarked at Embden for England early in the year 1795 ; the gleanings of the whole were collected at Bremen, removed from Bremen to Bremenlehe, and embarked for England in the month of May.

The sickness which prevailed in the army, particularly in the regiments of infantry, during the retreat, was great, and mortality was great, in proportion to the number of the sick. I cannot pretend to give an official return of the hospital casualty ; but, I believe I am within the limit, if I say that one-third of the infantry died, or was rendered invalid by the effect of disease between the 1st of August, 1794, and the 1st of May, 1795.—The leading facts of the medical history of the campaign have been stated. Those who admit the facts, (and they are subject to proof,) and who are capable of estimating correspondences between cause and effect, will not be disposed to deny that the disease and its consequences were, in a great measure, the work of our own hands. The form of disease did not belong to the country ; and the extent of mortality which occurred, did not belong to the disease. In proof of the first position, I may add, that the cavalry, and even that

the officers of the infantry, the medical officers excepted, were, upon the whole, healthy, though they traversed the same field, and breathed the same atmosphere, as the men of the battalions. The duty of the common soldier was generally such as might be termed alert. It rarely implied extraordinary exertion, and rarely could be supposed to occasion fatigue to men who were qualified to bear the name of soldier. Many, it is admitted, slept upon mire during wet weather; many were injured in their extremities, and not a few were actually frozen to death, during the rigour of the winter cold. These were contingencies separable from the service; they were not in reality the cause of general sickness. That cause, in whatever way it might have been produced, was evidently a cause of febrile contagion, concentrated and rendered virulent by the accumulation of masses of men in general hospitals. The virulence, concentrated at this source, was disseminated through the army by the infected persons of living men, sent back to their respective corps as convalescent; or, by the infected clothing of dead men, sent to the regimental store, as Colonel's property. The history of the fact proves the artificial source and artificial propagation; the history of the construction of the hospitals, and of the treatment of the sick, proves that the mortality of the disease was artificial. At Rhenen, the largest of the sick

depots, the mortality was not, according to the best information that I have been able to attain, less than one in three, if so low; in others, not less than one in three or four. It was generally less, and in some instances, greatly less, in regimental than in general hospitals. In the Buff, one person only died of fever between the 1st of August, 1794, and the 1st of April, 1795; during which time one hundred and fifty had been returned from the hospital to duty, exclusive of those who were sent to general hospitals in certain stages of convalescence, when the corps was ordered upon service of alert.—In eighteen months, viz. from November, 1793, to April 1795, six persons in all, died in the regimental hospital, two of them only from a disease properly called fever;—two others were sent away with little prospect of recovery.

The disease which prevailed in the army in 1794 and —95, was decidedly of a contagious nature. The medical doctrines which prevailed at the time, had classed contagious fever, or typhus, as it was called, among the diseases of debility; consequently had decreed, that the proper and direct means of cure consisted in stimulating by wine, bark, and opium.—In correspondence with this idea, wine, bark, opium, aromatic and opiate confection, camphire, and occasionally blisters, constituted, in so far as I had the opportunity of observing, the cardinal means of remedy that were employed on

this occasion. The practice of the author was different: it is necessary to say, that it was not altogether that which he would now employ, if a disease of the same character were brought under his notice. Blood-letting was employed only on rare occasions; that is, where symptoms indicated oppressions connected with what may be called congestion, or the stronger forms of inflammatory action which threatened to terminate in suppuration. These cases made an exception, but, excepting these, a vein was scarcely ever opened; the principal means of remedy were notwithstanding evacuant. An emetic was generally the first thing given; and of these the antimonial were preferred. Jalap and calomel, and sometimes calomel and James's powder, were administered after the operation of the emetic was finished, blisters being applied, at the same time, to the forehead, temples, and nape of the neck. The skin was washed with soap and warm water; and afterwards, on most occasions, with cold water from the brook or pump. If all the parts of this process were executed, with due attention to circumstances, the course of the disease was broken, for the most part in such manner that the patient became convalescent by the third or fifth day, and not unfrequently returned to duty by the seventh or eighth. The mortality, however formidable appearances might have been at the commencement, was reduced to nothing compa-

tively, especially where the subject of the disease was accommodated in a barn, or other place, that was openly, freely, and fully ventilated. On the contrary, if the first days of the disease had passed before remedy was applied, or if the sick apartment was crowded and ill-ventilated, the mode of proceeding was not so direct, and the issue was not so certain as it is here stated to be. The symptoms often became alarming, the excitement sometimes excessive, the depression consequent to it sometimes extreme. In one case, opiates, blisters, affusion of cold water on the naked surface, antimonials internally, and warm fomentations to the extremities; in the other, wine, brandy, snake-root, ammonia, camphire, &c. were among the more usual of the prescriptions. Stimulation was sometimes carried to great length; and it sometimes apparently saved life. I am now of opinion that the end might have been attained with greater certainty, and with less risk of danger, by the auxiliary aid of the lancet, which, under the impression of prejudice, I durst not then venture to employ. Upon the whole, I think I am safe in saying, from what I saw and what I tried, that the fever, which prevailed among the British infantry, during the retreat through Holland, was not a disease of a mortal character in its own nature, if treated with decision at the commencement, under an atmosphere of common purity; that

neglected during the early stage, and especially if treated in the common manner, by means of direct stimulation, in crowded and ill ventilated hospitals, its mortality, as the returns of the army amply testify, was enormously great.

SECTION II.

Summary of the History of Contagious Fever, as it appeared among a Division of Troops collected at the Cove of Cork, in Ireland, in the Year 1795 ; for Service in St. Domingo.

The Infantry of the British army having been withdrawn from the Continent in the month of May, 1795, the tide of war was directed to the West Indies ; and, from the tumultuous and unsettled state of the French possessions in that quarter of the world, it was directed to it with some prospect of success. Two armaments were prepared and equipped for the purpose, both of great magnitude according to the state of the British military at the time. Lieutenant-General, Sir Ralph Abercrombie was appointed Commander in Chief of both Armaments. He accompanied in person the one directed against the Charibean Islands, consisting of fifteen thousand men, the elite of the army ; the other intended for the conquest of St. Domingo, was collected in Ireland, assembled at the Cove of Cork, and conducted to Barbadoes, under the

orders of Major-General John Whyte. The St. Domingo division of the armament consisted of about nine thousand men, one-third of which was dismounted cavalry. The infantry regiments intended for the service being low in strength, were filled up to the standard by drafts from newly-raised regiments then serving in Ireland: as such, they were somewhat heterogeneous in composition; not elite, and not very fit for the West Indies, in defect of economical discipline.

The St. Domingo expedition, as it was called, consisted of the 17th, 32d, 39th, 56th, 67th, 93d, and 99th infantry; the 13th, 14th, 17th, 18th, 21st, 29th, and part of the 26th cavalry. The cavalry regiments were generally good; the majority of the new regiments of infantry, raised in manufacturing towns, consisted, for the most part, of men not well calculated for the service of the field. Many of them were radically unsound in constitution, dissolute in morals, aggrieved and dissatisfied with their military condition. Discontent was general; mutiny actually took place at Cork in the month of September. Drunkenness and irregularity attended the mutiny; broken spirit and despondence followed as a consequence of its suppression. Desertion prevailed; and, still greater desertion being apprehended, it was thought proper to diminish the chances of effecting it, by forming an encampment on Spike Island,

a bare unsheltered island in the harbour of Cove.

The weather, usually wet, damp, and drizzling, on the west coast of Ireland, at this season of the year, was boisterous and stormy in the year 1795, particularly in the months of October and November. The tents, in which the soldiers lived, were often blown down by the violence of the winds; and as rains generally accompanied the higher winds, the soldier was frequently wet to the skin; and, while wet by descending rain, he was chilled and benumbed by the damp and bare ground, or the damp and rotten straw on which he was obliged to lie. The ships destined for the transport of this force to its destination, did not arrive until near the middle of November. Orders were given for immediate embarkation; and, as there were suspicions of existing contagion among the sick, it was proposed that a ship should be allotted to each infantry regiment, as regimental hospital, in the view of lessening the chances of its spreading in the corps. The propriety of the measure was admitted; the deficiency of tonnage did not enable the General commanding to comply with it.

The troops, destined for St. Domingo, were supposed to be ready to sail early in October; the ships which were to carry them did not arrive, as already observed, until near the middle of November. A proportion of the force

was encamped on Spike Island, early in September. It suffered considerable inconvenience from bad weather, and the ennui of confinement during the time of its encampment ; but what is strictly termed sickness did not prevail, even so late as the middle of October. At that time, no more than twelve persons stood in the febrile column of the hospital return ; about double the number in the dysenteric ; the column for sores, or ulcers on the legs, was crowded, viz. little short of four hundred, in a force not then exceeding three thousand rank and file. As many of the ulcers were then slight, and as many of the subjects who suffered from them had the appearance of being, or the capacity of becoming good soldiers, it was thought proper to make trial of what could be done for them by surgical treatment, prior to putting them on the list for discharge. In execution of this intention, thirty men were selected for experiment, generally young men, the ulcers recent and not deep. These were put on board of a vessel in the harbour which was suitably prepared for their reception, and given in charge to one of the surgeons of the expedition. At the end of three weeks no progress towards cure was observable in any one ; and, in several, the slighter sores had degenerated into foul, spreading, and bleeding ulcers.—The fact is distinct ; it is adduced in confirmation of the opinion, that certain ulcerative forms of

disease are actually local forms of the action of a febrile cause.

Sickness increased rapidly after the middle of October; and, as there were no means of accommodating the sick on the island, the miseries were actually great. Towards the end of the month, some small vessels (brigs) were fitted up for the reception of the worst of the cases; which, with a small hovel near the shore, set apart for the sick of the 17th regiment, were all that the medical department commanded: they were inadequate to the purpose.—The form of disease was chiefly dysenteric while the troops were under canvas; it was often converted into fever, when they were removed to the regimental hospital of the 17th regiment, or to the small vessels which were denominated hospital ships.

The whole of the infantry was embarked about the middle of November; the progress of the sickness seemed to be suspended for a fortnight or three weeks thereafter. The attacks of illness, during this interval, were in fact few; such as did occur were distinctly febrile. By the end of December, fever was in a manner epidemic; and, before the middle of January, every house and hovel on Spike Island was literally crammed with sick. By the 23d of February, the day on which the expedition took its final departure from Cork harbour, one-half of the infantry, the 67th regiment, and

perhaps the 93d excepted, either were, or had been ill. The sick list of the 67th, amounted, prior to embarkation, to seventy persons, mostly dysenteric. The dysenteric form was suspended after embarkation; and fever occurred so rarely, that more than ten or twelve persons were rarely in the sick report at one time, prior to arrival in St. Domingo. A fever, of a character decidedly contagious, prevailed in the 93d regiment, at the time it arrived at Spike Island. It lost some men while it was encamped, more, in fact, than any other corps then present; but, contrary to what happened in others, the sickness diminished rather than increased after embarkation. The 106th regiment was drafted into the 56th. No material sickness was observed in either corps at the time the draft was made. Before the expiration of a month, the 56th was one of the most sickly of the regiments that were assembled at Spike Island. The 17th, 32d, 39th, and 99th, suffered greatly, and in nearly equal proportion. In some of the transports, particularly in the transports in which the 39th and 99th were embarked, twenty, and even thirty men were, on some occasions, added to the sick list in the course of one night;—the invasion sudden, as if from the breath of pestilence.

The sickness, which prevailed among the infantry regiments during their detention in the harbour at Cove, was formidable. The greater number of the cavalry regiments were healthy,

and suffered little loss by death. The 13th, 14th, and 17th light dragoons seldom sent a man to hospital. The sick list of the 18th was comparatively high ; but no one died. The 21st had been embarked in England in a ship of war : it was not altogether healthy when it arrived at the rendezvous. The disease, under which it suffered, appeared to have been originally autumnal fever of the gastric form, converted by confinement on board of ship, and other causes connected with the circumstances of the corps, into a fever of genuine contagious character. It increased under embarkation, and increased so fast that the 21st dragoons, sickly as any of the infantry regiments, actually sent more of its numbers to the hospital at Barbadoes than any other corps of equal strength. The 29th light dragoons, another of the regiments which composed the St. Domingo expedition, was embarked in England, and rendezvoused at Cove. It was embarked in ships which had been employed in bringing sick or convalescent from the Continent ; and whether owing to contagion thence derived, or to other unknown cause, the marks of a fever of a suspicious character were visible in the corps at the time of its arrival. It was banished from one of the transports during embarkation ; it gained ground in the other. A disease of a similar form and character appeared in a detachment of the 26th dragoons which accompanied the expedition.

It was not known whence it was derived: it did not spread so as to become general.

The fleet, which had been detained in harbour from the middle of November, in daily expectation of meeting with a fair wind, proceeded to sea on the 9th of February. The order for sailing was sudden and unexpected; and most of the transports, though waiting as in readiness, were ill prepared for the voyage. The tempestuousness of the weather had, during the whole period of the detention, prevented the sick from being sent on shore, as they ought to have been sent at the commencement of the illness; and, as the sick were accruing daily, there was considerable accumulation in several of the ships at the time the order was given for sailing; an order which was so promptly executed, that few of the transports were able to disembararrass themselves of what was unfit to be carried to sea. The wind changed soon after the fleet was clear of the harbour; and the greater number of the transports, after contending for two or three days against contrary winds in stormy weather, were obliged to return to Cove. Some bore away for England; others put into ports in the west of Ireland; a few of the best sailors persisted in keeping the sea, and meeting with favourable weather after a few days of contention, proceeded to the rendezvous at Barbadoes. Among these the *Abergavenny*, and *Hindostan*, *Indiamen*, carrying troops,

arrived at Barbadoes in a sickly state, particularly the latter.

Some of the transports which returned to Cove, returned with sickness aggravated in an extraordinary degree. The ship *Flora*, in which part of the 99th regiment was embarked, was literally an hospital ship, so infected with contagion, that the absolute want of tonnage alone made her to be again employed for the transport of troops. The *Flora* was cleared out, cleaned, and fumigated: the men were encamped on Hawl-bowling Island, washed, new-clothed, and re-embarked. The cause of sickness appeared to have been weakened by this proceeding: it was not destroyed. A considerable number of persons were attacked during the passage to Barbadoes; four of them died, with the officer commanding the regiment. The other sick were immediately removed from the ships as soon as the fleet returned to harbour; and, the prospect of sailing with the first fair wind being always in view, little preparation was necessary to be made when the hour arrived.

The passage to Barbadoes was a favourable one; the wind was generally fair, and sickness did not spread materially, or occasion much loss, unless in a few of the ships after the first fortnight. The expedition arrived at Barbadoes on the 1st of April; and though fever still existed in most of the transports which carried

infantry, the aspect of the disease was changed from what it had been, particularly in the property of not communicating infection to those who approached near to the diseased subject. The sick were sent to the hospitals at Barbadoes, as soon as the fleet arrived in Carlisle Bay ; and, when the division for St. Domingo was ordered to sail for its destination on the 19th of the month, all those who were considered as convalescent, amounting to about six hundred, were embarked in separate vessels, called hospital ships. Relapse was frequent among them during the passage, sometimes in febrile, oftener in dysenteric form. The duration of the disease was ordinarily short in relapse ; and the property of propagating to nurses and attendants, so conspicuous in northern latitudes, was visibly weakened, if not lost. The expedition arrived at Cape Nicholas Mole on the 1st of May. Relapse continued to recur during the greater part of the month among those who had been ill at Spike Island, or on the passage to the West Indies. The symptoms were often violent, even alarming, viz. agitations, tremors, startings, tendencies to convulsion, severe spasmodic gripings, and, on many occasions, copious and acrid evacuations by stool. Relapses recurred repeatedly in the same person ; but it was remarked that, while mortality was insignificant, and contagion not perceivable in relapse, the tone of health rose to a higher pitch of vigour after

every recurrence, so as to impress an idea that something oppressive to life had exploded under the existing febrile act.

No place of accommodation had been provided for the sick of the troops that were ordered to rendezvous at the Cove of Cork. Spike Island, the place on which they were encamped, and to which, as a place of comparative security against desertion, it was thought proper they should be confined, was destitute of the means of furnishing cover from the inclemencies of weather, and totally destitute of places suitable for the reception of sick. Four small vessels were ordered to be equipped as hospital ships towards the end of October: their capacities were insufficient for the wants at the time; and, small as that capacity was originally, it was soon reduced, by two of the vessels becoming infected with the contagion of fever. A military work had been recently erected on Spike Island, for the defence of the harbour. The barrack, which belonged to it, was appropriated, under the existing emergency, to the reception of the sick of the expedition: it was something, but its extent was insufficient. Besides the small vessels, and the barracks in Westmoreland Fort, the Bridgewater, an hospital ship, destined to accompany the expedition to its destination, for the purpose of receiving any sick which might accrue among the transports during the passage, afforded some relief, but not much, as

little liberty could be taken with her during the time the fleet remained in harbour. The hospital exigencies were great; and, under urgent necessity, the transport ship John, and two small brigs, were set apart for the reception of persons discharged as convalescent from the hospitals on shore, in the view that these convalescents might undergo a course of purification and discipline, probationary of the re-establishment of health, prior to their being sent to their respective regiments.

With these means of accommodation, inadequate as they were to the extent of the wants, the hospital business was dragged on to the middle of January. Sickness increased fast during that month; it in fact, so far out-ran the hospital casualty—discharge and death, notwithstanding the great amount of the latter, that every hovel, barn, or stable, on the island was filled with sick; some sheds were moreover erected near the sea beach for hospital purposes.

I have stated, in a summary manner, the principal circumstances which might be supposed to bear upon the health of the troops while detained in harbour at Cove, noticing, at the same time, the means which were provided for the accommodation of those who might happen to be sick. I shall now advert cursorily to a few circumstances connected with the subject, and which appear to myself not to be undeserving

of notice.—The state of health, as well as the aspect of disease, when disease did occur, was not always according to the rule by which these conditions are ordinarily calculated. Health did not seem to depend, in all cases, upon the actual, at least the apparent cleanliness of person, the cleanliness, the space and ventilation of the 'tween decks, where the troops were stowed. The Indiamen, the 'tween decks in which were spacious, clean, and airy, were among the most sickly of the transports which carried troops to the West Indies on this occasion. The most of the smaller vessels, (brigs, &c.) where the 'tween decks were low, not clean, and not well ventilated, were comparatively healthy—sickness mild, or scarcely noticed. The fact is authentic, and it is not unimportant, as it gives ground to believe that, where a contagious disease is introduced into a transport ship, the contagion spreads in a compound ratio of the quantity of the living mass confined within the circle, whatever may be the capacity of the 'tween decks, the cares employed in washing and fumigating, and even the care employed in personal purification.

It was observed that a few of the regiments belonging to this expedition, which were sickly at the time of embarkation, recovered health, or arrived at their destination without increase of sickness. Of these the 67th recovered health, after embarkation, so as to be fit for the most

effective duty when disembarked at Cape Nicholas Mole in St. Domingo. The 93d, a new regiment, was sickly when it arrived at Spike Island. It embarked with a long list of sick, and with presentment of increase ; but the sickness, instead of increasing, diminished during detention in the harbour, and more remarkably still on the passage to Barbadoes. I do not assert positively that this improvement arose from the management of the officer who was entrusted with the command ; but, whatever might be the actual cause of the improvement, the unwearied diligence and affectionate care of Lieutenant-Colonel William Gammel to the concerns of the soldier, on every occasion where his conduct fell under my notice, as they impressed me with a high respect for his character at the time, so they have left with me a strong feeling of veneration for his memory. Besides the 93d, the 29th light dragoons arrived at Cove in a sickly state. The disease prevailed in both the transports in which the corps was embarked, at the time it arrived at the rendezvous at Cove : it was banished from the one in which the commanding officer, Lieutenant-Colonel Hay himself was ; it continued in the other. The fact is striking : I was disposed to ascribe it at the time to the judicious care and attention of Lieutenant-Colonel Hay, who was then esteemed, and apparently with good cause, to be a man of sound judgment and superior know-

ledge in matters which relate to military economy.

But though sickness sometimes prevails to great extent on board of transport ships, notwithstanding attention to the personal cleanliness of the men embarked, as well as to ventilation by wind sails and air-holes, washing, and fumigating by means of nitric or muriatic acid, yet the history of what occurred in the ship John, which was employed as an hospital ship in the St. Domingo expedition, seems to afford proof that, if the condition cannot be rendered perfectly healthy, something may still be done in mitigation, even while the troops are on board, and the vessel at sea. One hundred and twenty persons were embarked in the ship John; eighty of them actually sick, or recently received from the hospitals on shore in that precarious state of convalescence, from which scarcely one in twenty attains perfect health without sustaining relapse in one form or other. The other forty belonged to the hospital corps, relieved from attendance on the sick at Spike Island on the eve of sailing; and moreover ordered on board without time being given for personal purification. The greater number of the hospital corps were attacked with fever, in a few days after they embarked; the form of the fever concentrated and of an extraordinary degree of virulence. Some fell down instantly as if they had been knocked on the head by a

blow from a hammer ; the aspect of countenance, in such case, was usually dark and cloudy, the colour like mahogany, with a tinge of yellow. In some instances, the pain in the head was excessive ; the eye was often glossy and inanimate, resembling the eye of a person that was deeply intoxicated. The heat of the surface was seldom increased beyond natural ; the skin was thick and torpid, and usually dry ; the pulse was rarely increased in force and frequency ; it was oftener deep, and, as it were, oppressed ; the ordinary secretions were irregular, —often suspended :—death took place not unfrequently within forty-eight hours from the time of attack. In the first ten days of the voyage, twelve persons, belonging to the hospital corps, were carried off by fever of the aggravated form alluded to ;—the most of them within the fifth day.

The ship *John*, notwithstanding that she was cleaned daily, and fumigated frequently while she was in the harbour, was deeply infected. A succession of sick, or convalescent from infected hospitals had inhabited her 'tween decks for upwards of three months ; so circumstanced she proceeded to sea under rather a melancholy presage. The officer, who had the direct medical charge, became indisposed at the end of a fortnight ; and the writer of this analysis, as the only other commissioned medical officer on board, assumed his duty in necessity. The wind

was now fair; the weather was fine, and every person, sick or convalescent, was ordered to be on deck during the day, even some of them were kept on deck during the night. The sick were disposed in rows on the fore-castle and waist of the ship; they were stripped naked, scrubbed with brushes, and washed clean in rotation, with warm salt water, softened by the addition of a handful of oatmeal. When the skin was cleaned and softened by means of warm water, one or more bucket-fulls of salt-water, drawn directly from the sea, were poured upon the head and shoulders. The person of the patient, thus purified, was wiped dry, put in clean linen, and laid in a clean blanket on the deck—on a part of it where he was not likely to be disturbed. The addition of a hand-full or two of oatmeal to a tub of salt water, not only renders it fit for purifying the skin, but for purifying linen and flannel, if not perfectly, at least in such manner that they may be worn with safety and pleasure. The knowledge of this fact enabled the purveyor who was on board of the John to give a clean shirt to the sick and convalescent every other day; a clean blanket once a week, or oftener. Under this discipline, which was most assiduously followed up, the virulence of the disease was sensibly diminished in less than three weeks; the seeds of it were not destroyed. Relapse occurred frequently, in one form or other; it had not

ceased when the fleet arrived at Barbadoes.—Twelve persons, as already observed, died in the course of the first ten days; the deaths amounted only to seven during the remainder of the voyage, and three of these seven were received in a hopeless condition from a sickly transport at sea.

The cause of contagious fever was concentrated to almost the highest possible degree of concentration in the ship John, at the time she sailed from the harbour at Cove. It was diluted on the passage to Barbadoes by the admission of pure air, and other forms of discipline to which the diseased subject was submitted. The force was diminished; the cause still existed, and actually produced considerable variety in the form of the disease. Besides formal fever, severe head-ache, rising and falling periodically, giddiness and faintness, nausea and vomiting, vitiated secretions from the mucous membrane, bad taste in the mouth, loathing of food, increase of thirst, foulness of the tongue; purging on some occasions, costiveness on others, sensations of defective expulsive power, want of sleep, or sleep disturbed by dreaming and reverie, with a variety of uneasinesses, probably influenced by individual idiosyncrasy, were usually perceived by the person who temporarily immersed himself into the infected air in the 'tween decks, or came in close contact

with one of those who were highly infected, even as lying in the open air.

The sickness, which prevailed among the troops which were assembled at the Cove of Cork in the autumn of the year 1795, furnished an extensive field for observation on the nature and effects of the artificially contagious fevers of armies. The operation of the cause was manifested under a variety of forms—general or local. Eruptions, sores, foul and spreading ulcers on the legs, sometimes of a gangrenous character; diarrhea—watery purging; dysentery—severe gripings, slimy and bloody stools, were the more prominent of the local. The general or febrile forms were numerous, and of various degrees of intensity, viz. from mild and moderate, to threatening and concentrated, which might be almost said to suspend life by a direct operation. During the time the troops were encamped on Spike Island, the prevailing form of indisposition was ulcerative or dysenteric. The subjects of the first form, viz. ulcerative, were discharged from the service; those of the second, viz. dysenteric, became febrile on board of ship, or in warm hospitals on shore. The more concentrated of the forms of fevers, which were received into the hospital at Fort Westmoreland, seldom terminated perfectly by regular crisis. The violence of the symptoms subsided at a given time; the patient staggered

about in the ward for a few days, as if he were making progress in recovery. He was even sometimes deemed convalescent, returned, or on the eve of being returned to his regiment, when disease recurring, suddenly overwhelmed a vital organ by immediate oppression ; or, exploding, if the expression be admissable, upon a part of inferior vital importance, frequently the coats of the intestinal canal, consumed life slowly through the consequences of local derangement. Where the sick were disposed of in barns, sheds, and open hovels, the symptoms were often violent ; the mortality was inconsiderable, the recovery often speedy, and comparatively secure. Where they remained in their berths, in the 'tween decks on board of ship, the expression of the symptoms was obscured, the course rapid, the effect frequently fatal. Where they were brought on deck, and obliged to remain on deck during the day, the course and issue was similar to what was observed in the sheds on shore ; that is, the symptoms assumed another form — more violent in appearance, less dangerous in effect. Relapses recurred repeatedly, after a few days of apparent convalescence. They ordinarily occurred with diminished violence, at least diminished duration, and diminished danger in every succeeding relapse. In crowded hospitals, and crowded transport ships, filled with sick, relapse generally brought the patient nearer to

death; here relapse removed him further from it, the result impressing the idea that a portion of the oppressive, or morbid cause, had exploded in the last act of the fever.

The cause of the fever, which is the subject of this sketch, retained the power of propagating itself even within the tropicks, among those who were confined to the 'tween decks. That power was evidently weakened, if not lost, among those who were carried on deck, and who were obliged to remain on deck during the day, particularly among such of them as were washed, scrubbed, affused with cold salt water, and supplied with clean linen and a clean blanket after ablution. In proportion, as the cause of disease was weakened by dilution, or the powers of life invigorated by the impulse of pure air, ablution with cold water, and the refreshment of clean linen, the symptoms showed a comparatively greater fluctuation in mode. The relapse was thus often sudden; the symptoms sometimes violent in appearance, sometimes slight; the duration generally short; the form febrile, sometimes periodic, like intermittent, but not like intermittent which arises from an endemic cause, often dysenteric, sometimes intellectual, like mental alienation, and now and then effusive into the cellular membrane, producing temporary anasarca.

The history of the sickness of the St. Domingo expedition has been given at some length. The

means of accommodation provided for the reception of the sick at Spike Island have also been noticed. These were prodigiously deficient; but, except in want of space and ventilation for the hospitals, nothing was wanting which money could procure. The provisions were good; wine and other comforts were at the command of the medical officer; clean bedding was issued wherever it was required, and medical officers were sufficient in number. As regularly appointed, they were held to be qualified to discharge their duties, and I have the satisfaction to say that they did it to the best of their abilities. The air of the places where the sick were collected was, for the most part, contaminated to an extraordinary degree: that contamination alone rendered their endeavours to save life abortive.

The principle which directed the practice in the hospitals on Spike Island was the prevailing principle of the time, viz. stimulation in one form or other; and, according to this principle, wine, bark, opium, camphire, aromatic and opiate confections, with blisters occasionally, constituted the principal routine of remedies. Dr. Chisholm, who had just then published an essay on the malignant pestilential fever which occurred at Grenada, in the West Indies, in the year 1793, was passenger in the fleet. He was acquainted with the state and condition of the sickness which prevailed among the troops; and

seeming to consider the disease as similar to what he had seen in Grenada, he strenuously recommended that trial should be made of mercury, as a means of cure. The recommendation was attended to by some, particularly by those who had medical charge of the 99th regiment. The trial was, I believe, made fairly ; I cannot bear a very favourable testimony to the effect. The duty which belonged to the writer of this analysis, was that of superintendence, rather than that of physician ; but, as it is difficult to abstain from a favourite pursuit, especially where there is no moral wrong in the indulgence, he assumed physician's duty on this occasion, so as to take charge of all those who were lodged in the hovels and sheds on the outside of Fort Westmoreland. The number amounted to about one hundred and fifty persons, scattered in different hovels near the sea beach. The outline of practice on this occasion was the same as that which had been applied to the sick of the Buff in England, and on the Continent, only, as there was greater facility of obtaining salt water on the present than had been in most other situations, cold affusion was more generally employed, perhaps, than it hitherto had been. Emetics, generally antimonial, or with some grains of powder of ipecacuanha ; purgatives—jalap and calomel, rhubarb and calomel with James's powder in greater or less proportion ; blisters to the fore-

head, temples, and nape of the neck; copious affusion of cold salt water, with occasional fomentation of the extremities by means of flannel wrung out of hot water, constituted the routine of practice during the first days of the disease. Calomel, camphire, snake-root, James's powder variously combined; blisters, fomentations, and in many cases, direct stimulation by means of opium, wine, brandy, &c. were the principal of the means employed at late periods. Blood-letting was tried on some occasions, not often; for it was not until the medical charge of the sick devolved upon me in the ship John, in the passage to the West Indies, that I overcame the prejudice, which was then so common, against abstraction of blood in fevers which arose from a source of personal contagion.

The sickness which prevailed among the infantry which composed the St. Domingo expedition, was uncommonly great; not less than one in five; the mortality was in proportion to the number of the sick. I cannot state the proportion precisely, having lost the official returns of the hospital casualty. I am safe in saying that not fewer than five hundred were buried between the middle of October and the end of February; during which time three thousand at least, had been entered on the hospital lists, or sick report. The mortality was great in the barracks in Fort Westmoreland, converted to the purpose of an hospital, and literally crammed

with sick ; it was inconsiderable in the sheds and hovels, which were scattered upon the beach. The difference was striking ; the cause is obvious ; viz. artificial condensation of subject in a close ill-ventilated building—and comparative diffusion of the same class of subjects in small detached buildings, scarcely weather-proof.

The great pressure of sickness, and the multiplicity of concerns connected with the superintendence of hospitals, prevented me from taking down cases in detail, while the fleet remained in the harbour. A note of what was most striking was notwithstanding made, in the presence of the sick ; but made without order, in manner of arrangement. The more remarkable of the cases that occurred in the ship *John*, during the passage to Barbadoes, were entered in the book, though not with much detail, by the juniors of the hospital staff who were on board. I select two or three of them.

CASE I.

Spike Island, January 20, 1796. S——n, a soldier, near sixty years of age, had been ill of fever, and seemed to be advancing in recovery, that is, he walked about as convalescent, when chilliness came suddenly upon him, followed by a collapsed and withered aspect of countenance. The sensation of chilliness was followed by sensations of deep-seated caustic heat, a dry skin, a small confined and frequent pulse.—21. He died in the course of the day, with an aspect shrunk and withered, as a blighted or fallen leaf.

CASE II.

Spike Island, January 31, 1796. B——n, a young man, while in the act of embarking for the convalescent ship among persons discharged from the hospital, struck the eye of the medical officer, who inspected the condition previous to embarkation, as pale, dry, and withered, in fact, as a person extremely ill, rather than convalescent. He was sent back to his ward; and, in a short time, signs of actual fever were manifest. The heat was ardent and caustic—deep seated: the pulse small, frequent, and inelastic; the aspect pale, shrunk, and withered.—February 1. He died in the course of the day, withered as a blighted leaf.

CASE III.

Ship John, February 26, 1796. Warren, of the hospital corps, advanced in years, relieved, on the 23d, from orderly attendance on the sick in Westmoreland Fort. Warren had been observed, by his comrades, to droop from the time he came on board of ship; but, being a quiet and modest man, he endeavoured to conceal his indisposition. To-day, he was seized suddenly with pain in the head, so stupifying as if he had been knocked down by a blow from a hammer. The eye was white, glossy, and inanimate; the countenance grim and cloudy, with a tinge of dusky yellow. The pulse appeared to be natural at the first impression, correctly and closely examined, it betrayed defect in elasticity and expansion. The heat was low on the surface and extremities; it was pungent on the trunk of the body, and even on the arm, when the arm was closely pressed by the hand. The tongue was foul, white, slimy, and moist; the saliva tough and ropy. The head was blistered; the warm bath was ordered; the bowels were opened by calomel and James's powder. He seemed to be easier towards the evening.—

27. Seized with convulsion in the night, and died suddenly; the countenance dark like mahogany, with a tinge of yellow.

CASE IV.

Ship John, March 18, 1796. Sewel, of the hospital corps, aged fifty-five, orderly attendant on the sick, and, as such, often employed on business in the 'tween decks, either in cleaning out the sick berths, or in removing the sick to and from the deck, was attacked on the 18th, with symptoms of fever, viz. head-ache of great severity, with a dark, grim, and withered aspect of countenance; the pulse small and weak; the tongue foul and dry; the heat moderately increased. An emetic was given immediately; and, after its operation was over, a dose of calomel with James's powder was prescribed for him; the head was shaved and blistered.—20. The skin dry; the pulse small and weak; the severity of the head-ache lessened. Ten grains of camphire, with the same quantity of snake-root, every third hour.—23. Slight perspiration—not fluid, and not warm; medicine continued.—24. Not worse; the pulse somewhat more open. Evening. Hiccup—frequent and severe;—Æther frequently.—25. Pulse not perceptible; the extremities cold and clammy; ten grains of camphire in three ounces of rectified spirits of wine every hour.—26. Pulse perceptible; heat restored to the surface.—27. Marks of improvement.—29. Much better. He relapsed on the 3d of April; he recovered; he relapsed, and again recovered, so as to be able to do the duty of orderly for some months, when, being attacked in St. Domingo with the concentrated endemic or yellow fever, he shared the fate of many others.

CASE V.

Ship John, March 6, 1796. Crawford, Ward Master in the ship John, in the passage to the West Indies, was attacked on the 4th, with symptoms of fever of much violence,

viz. shivering, head-ache, nausea, heat and pain in the eye-balls, confusion in vision, tongue white and foul, pulse frequent, but not in any extraordinary degree. An emetic was given immediately; and, after its operation, which was very effectual, ten grains of calomel, and at a short interval a solution of salts in divided doses. The head was shaved and blistered; a blister was moreover applied to the nape of the neck. The calomel was repeated; the head-ache relieved; the other symptoms moderated.—7. A restless night; the skin hot; the pulse quick; the tongue foul; calomel, with James's powder.—8. Head-ache severe; bled largely, (quantity not stated); the pain was instantly relieved; the skin still continues hot; the pulse small and quick; the body costive: calomel and James's powder repeated.—9. The body open; no return of head-ache; the skin hot; the pulse quick; calomel and James's powder repeated.—10. The pulse open and expanded; the tongue clean at the edges; the skin soft and moist; crisis.—11. Sound sleep.—12. Skin open and soft.—13. Convalescent. No relapse.

DISSECTIONS.

A few persons, who died of contagious fever in England, Holland, and Ireland, were opened in the presence of the author, but no correct minute was made on the subject at the time. It is only recollected that, in some there was serous effusion into the cavity of the cranium; in others, congestion of blood in the sinous veins; and, where the disease had been protracted, with a series of relapses, the gastric system, and particularly the coats of the alimentary canal, were ordinarily much diseased, viz. adhesions, ulcerations in the mucous membrane, and not unfrequently gangrene in the peritonæal coat, particularly in cold and damp weather, and in highly infected hospitals,

SECTION III.

*A Summary of the History of Health in the
Russian Auxiliary Force, which acted with
the British Army in Holland, in the Year
1799.*

The medical history of the expedition to North Holland in the year 1799, though the service was not of long continuance, is important to the elucidation of some points of medical science. The British army landed at the Helder in good general health. From the manner in which it had been collected and equipped, it may be safely concluded that it was free from the contagion of fever. The Russian part of the force was equally healthy as the British, decidedly without suspicion of lurking febrile contagion at the time it disembarked on the coast of North Holland. It consisted of about seventeen thousand men, well selected for war, and well equipped in appearance, a corps of *elite*.

Holland, as most people know, is a level country, a great part of it rendered habitable only by the industry of man; that is, by forming dykes, canals, and ditches. The autumn of the year 1799 was uncommonly wet, the weather boisterous. The ditches were filled with water to the brim, even to over-flowing; the whole surface of the land saturated with mois-

ture, except the sand hills near the coast. A part of the British army, as recently drafted from the militia, was totally unacquainted with the service of a campaign; the Russians themselves were not accustomed to service similar to what they had now to encounter; they had moreover met with a disaster at Bergen, which damped their ardour, and probably disposed them to be more easily acted on by causes of disease than they otherwise would have been.—The Russian army, it may be proper to observe in this place, is equal, if not superior in battalion array to any army in Europe. The Russian soldier is helpless as an individual, stripped of the mind and natural energy of the man by the mechanical operations of drillings, conducted under force, his power and usefulness exist only in the artificial combinations which belong to a machine.

Periodic fever—intermittent or remittent, is the form of disease most common in Holland. The gastric, whether manifested as slow, bilious, remittent, diarrhea or dysentery, was more usual in autumn 1799, among that portion of the troops with whom the writer of this sketch was connected than any other, or than all others put together. It prevailed among the British to considerable extent towards the latter end of October; and it appeared to have increased in a greater relative proportion after the armistice which led to the convention, than prior to that period. The evacuations by stool were some-

times watery and copious in the dysenteric forms; sometimes mucous, bloody, and offensive; sometimes bilious, green, yellow, or variously coloured. The disease, as more strictly called gastric, was slow in its course, obscurely remittent; the countenance was sallow; the skin sometimes of a dusky yellow colour; the pulse varied little from its natural state, at least, it was not irregular, and it was not frequent as a febrile pulse. Perspiration, or sweat did not often occur to any extent: crisis was rarely distinct and final. Parotids appeared in some cases:—there was little mortality prior to the close of the campaign.

The Russian troops experienced sickness similar in kind to that which occurred among the British. It was equally prevalent; and, as the hospital arrangements were less perfect, the medical duties less correctly performed, it was, as it is reasonable to suppose it would be, more aggravated in degree; it was not otherwise different. The tongue was sometimes white, moist, and very foul; sometimes brown, foul, and dry; sometimes clean, smooth, glossy, and parched; sometimes dry, and covered with a black crust, especially in the latter stages. The skin was usually dry on all parts of the body; the countenance was livid and withered, sometimes yellow, as in slighter degrees of jaundice; the aspect, upon the whole, was haggard and unpleasant. The eye was heavy and dull, often of a dusky yellow, the veins numerous and

turgid. The external heat was seldom high after the third day; perspiration rarely occurred; when it did occur, it rarely brought effective relief. Together with the symptoms now mentioned, sensations of distress at stomach; pain and flatulence in the tract of the colon; bilious purging, and sometimes bilious vomitings were troublesome. Parotids appeared in several instances; general anasarca swellings in a few: the mortality was not high, in proportion to the number of the sick.

No person of an unprejudiced mind, who considered the previous state of health among the Russians, could form any other opinion than that the sickness, which arose on this occasion towards the end of October, arose directly from causes which belonged to the soil of North Holland. No one, who is capable of looking at fact without prepossession, could deny that it had assumed a contagious character, so as to propagate itself by contact or near approach before the end of December, even perhaps before the middle of November. The weather was wet and cold in the months of October and November. The Russians were then in the field, under canvas; and, in want of straw, they were, like others, obliged to lie on the bare and wet ground. They were exposed to almost continual rain while they were in the act of embarking; their clothes were thus necessarily wet; and there existed no means of

drying them while they were on board of ship. The ships were overcrowded; and, as the Russians delight to live in close and hot air, it may be easily conceived that the space between decks was little else, during the passage at sea, than a steam bath of human exhalation. Besides the crowded state of the transport ships, the condition of health among the persons embarked was not sufficiently regarded in adjusting the embarkation return. Persons in health and persons slightly indisposed, were promiscuously thrown together; and, as thus thrown together by carelessness, they remained in mass until they arrived at their destination. The weather was now wet and stormy; the winds were contrary, and many of the ships, unable to keep their course, were obliged to take shelter in the harbours on the English coast. When the Russian force arrived at its cantonment, some in December 1799, others in January 1800, the list of sick was high, not less than one in seven, the prevailing form of disease decidedly contagious, viz. fever, such as arises in jails, ships, hospitals, and other crowded and ill-ventilated places.

The Islands of Jersey and Guernsey were destined for the winter cantonment of the Russian auxiliaries. As barracks did not exist in these islands sufficient for the accommodation of such a numerous host, materials were transported, and great despatch was made in

erecting sheds for protecting them against the inclemencies of weather. The sheds were weather-proof, and they were, upon the whole, wholesome habitations, more wholesome, in fact, than any of the older barracks then existing. The barrack, St. Laurence, at St. Helier in the Island of Jersey, was given up to a Russian regiment, viz. the regiment of Major-General Emmé. It is worthy of remark that Emmé's regiment continued sickly after those corps who lived in the sheds had attained a fair state of health. The proportion of sick to the effective was not, for at least two months, less than one to six; and, while the proportion of those actually sick was thus high, the aspect of those who still continued to do duty, as sallow and withered, discovered the operation of impure air on the energies of life. St. Laurence barrack was an old barrack, not well placed, ill-constructed, imperfectly ventilated, often infected with the contagion of fever, and, at the present time, crowded beyond the measure of barrack regulation. As the Russians are personally the cleanest people, perhaps, in Europe, little was necessary to be enforced on the head of personal cleanliness; but, as they are less nice in the arrangement of their quarters, orders were given that the barracks be scrubbed and purified with the most scrupulous attention: in consequence of that or other attention, the cause of the disease appeared to have been soon

eradicated; at least, the corps was in perfect health by the end of the month of March. The proportion of the sick, in the whole of the Russian force, did not, at that period, exceed one in one hundred. It rose considerably higher in consequence of the excesses which followed the termination of *Lent*. It again decreased; and, when the Russians finally departed for their own country, at the beginning of July, the division cantoned in Jersey, consisting of about seven thousand rank and file, did not produce more than thirty persons who were unfit to be embarked with their companies. One hundred and thirty-six of the Guernsey division were embarked in hospital ships; not on account of sickness, but that they might have fresh provisions during the voyage, some symptoms being observed among them which threatened the occurrence of sea scurvy.

The embarrassments, on account of accommodation for the sick, were considerable at both cantonments—less at Jersey than at Guernsey. The hospital for the British barracks at Jersey was given up to the Russian sick; the poor-house at St. Helier, capable of containing two hundred beds, was converted to the same purpose. Besides these, other resources were found at St. Aubin and Gross-ville, which served for the purposes of the corps cantoned at these stations. The means were limited at Guernsey; the sick were, in fact, hampered for

some time. The arrival of a division of troops with a long list of sick, about the beginning of January, induced the British General, who commanded, to allot the British barracks known by the name of Delauncey barracks, to the reception of the Russian sick. The barrack was a good one, and a large one; and, in addition to what was already in Russian possession, it afforded ample, and not bad hospital accommodation. The sickness was at this time high in the Island of Guernsey; and the symptoms of the disease were often of a threatening kind. The virulence began to diminish after the middle of January; and, before the beginning of March, the contagious property which the disease possessed at one time in a marked degree, was not perceivable. It may be proper to notice in this place, as probably conducive to the effect produced, that the Russians were inspected daily at their several barracks, that the disease, discovered at its first beginnings, was attacked by strong remedies, promptly administered, and generally administered with the effect of cutting short its course precipitately; and, moreover, that the effects of a bath, constructed after the Russian form, produced conspicuous improvement on the health of this people.

The fever which prevailed among the Russian troops, after they arrived in the islands of Jersey and Guernsey, was propagated by contagion;

it did not, of course, depend upon weather, or the operation of endemic causes for its existence. But, though it did not radically depend upon weather for its existence, the symptoms were more or less modified by the temperature and constitution of the atmosphere then prevailing. The cold of the winter was considerable; frosts were severe; and, what would not have been expected, the Russian constitution made less resistance to cold than the constitution of an ordinary Englishman; several Russians were frost-bitten in the extremities, when other troops did not suffer. Inflammation of the lungs was frequent among the soldiers who garrisoned the island. It was epidemic, and fatal in an extraordinary degree among the peasantry in some districts contiguous to St. Pierre. It is stated, on good authority, that the average mortality for the year, in the parish of St. Martin, does not exceed twenty; it amounted to twenty-five in the space of three weeks, at the beginning of the year 1800.—The disease, as exemplified among the peasantry, commenced with rigors, severe pains in the limbs, head, and back, tense and oppressed pulse, cough, difficult respiration, brown foul tongue, thirst, delirium, and death—usually on the fifth day. Such was the course of the disease as left to itself, or rather as aggravated by heating remedies and ardent spirits. Where blood-letting was employed at the commence-

ment, and repeated to sufficient extent, as occasions required, that is, until pain and impediment in respiration were entirely removed, the course of the disease was generally cut short; the event rarely unfavourable. Pneumonic symptoms were not common among the Russian sick in the month of December and early part of January, when the fever was not formidable they were not rare in February; they were prominent in March. Erysipelatous fever was frequent in April and May; during which time, scarlet fever of a malignant kind was epidemic, both in Jersey and Guernsey, especially among young persons.

The fever which prevailed among the Russian troops in the Islands of Jersey and Guernsey, was, strictly speaking, a contagious fever, produced artificially by circumstances. The more peculiar mark of its action among this people consisted in a tendency to subside at an early period, without signs of crisis by the skin or bowels. The arterial action, which was sometimes strong at the beginning of the disease, and which was sometimes accompanied by an ardent and pungent heat of the skin, abated, sometimes, on the third day, frequently on the fifth, sometimes gradually, so as to manifest a general disposition to stagnation in the veins, sometimes suddenly, manifesting an effect on an external part, not unlike an explosion of gangrene. In the first case, the sphere of the

circulation contracting itself with diminution of energy in the action of the vessels, the extremities became cold and livid; petechiæ and livid streaks appeared on different parts of the body; the petechiæ sometimes numerous, and of a dark shade in colour. The pulse was small, scarcely perceptible: it ceased, and death took place, at one time slowly, as if from defect of power to support circulation; at another time suddenly, as if the quantity of the mass, tending to stagnation in organs of spongy texture, had produced convulsion by irritation. But, though the effect of this generally stagnating tendency was often fatal, it was not fatal in all cases. The Russian rallied from this forlorn condition oftener than I calculated. He sometimes rallied through the operation of causes which was not within my comprehension; sometimes, apparently, in consequence of treatment, viz. the application of external heat to the extremities and surface of the body, abstraction of blood in small quantity, frictions with warm oils, internal cordials—brandy or other spirit. In the second case, viz. external gangrene, the explosion took place, for the most part, but not always, upon the extremities. Where it occurred at an early period, or what may be termed the first course of the disease, the heat of the surface having been previously unusually ardent, the explosion was sudden—almost instantaneous. An extraordinary redness and fulness was often observed

in the part prior to the explosion; subsidence of febrile irritation followed the act. The appearance of the explosive act was thus a sign of crisis in the first instance; the consequences of the gangrene were ultimately a cause of death in most.* Besides a disposition to gradual

* I here add a case illustrative of what I mean by explosion of local gangrene, at an early period of fever,—January 9, 1800. A man, of the regiment of Major-General Zedmorasky, was brought to the hospital, which was under the immediate care of Mr. Struvé, from on board of a ship just arrived from England with a part of the Russian auxiliaries. The man was cold at the time of his arrival at the hospital; even livid as from cold: he vomitted frequently, and appeared to suffer great distress. The sense of cold and appearance of lividness wore off after some time, and a hot stage of extreme ardency commenced. The face was red as live coal; the skin hot; the sensation of heat burning; the pulse frequent and strong; not such as usually precedes critical perspiration.—10. No abatement in the violence of the symptoms; the face full, swollen, and red as live coal.—11. The febrile symptoms subsided; the skin of a dingy yellow, and dry withal; the pulse regular, not frequent—without energy in its contraction; the eye muddy; the tongue large—of a sodden or parboiled appearance; the nose livid—literally gangrened.—12. The livid, or gangrened part of the nose circumscribed by a red circle; the other parts of the countenance brighter; the eye clearer; the appearance of the tongue more natural; the pulse more energetic; the skin still dry—the appearance less dingy; the body open; the heat not greater, if so great, as natural; livid streaks upon different parts of the body.—13. No material alteration; appearances somewhat less threatening.—14. The pulse subsides; the lividness increases.—15. The eye and countenance brighter; the livid less deep; the

decline of febrile irritation without signs of crisis, or explosion of local gangrene at a certain period of the febrile course now adverted to, there was more tendency to depositions of matter in the cellular membrane, or to serous effu-

skin warmer; the pulse more energetic.—16. Not better: pain and heaviness about the head; the tongue swollen and sodden-like; the heat somewhat above natural; the pulse accelerated towards evening; respiration easy.—17. Pain about the head; discharge of matter from the ear; the pulse more energetic; the tongue less swollen.—18. Lividness less deep; the pulse not febrile; the heat of the surface natural; the tongue clean—reduced to its natural size; matter discharged from the ear.—19. Appearances of amendment.—20. Ditto.—21. Better; the lividnesses disappearing; the pulse natural.—23. Lividnesses nearly gone; the nose subsided to its natural size—partly covered with a thick scab; the countenance still ghastly; the eye hollow and inanimate.—25. Better.—February 16. Appetite for food which, except during the first days, was never altogether wanting; is now good, the spirits cheerful. The dangers of the disease are past for the time; the constitution has sustained injury not soon to be repaired. The cartilages of the nose are sunk below the level, the appearance considerably disfigured; the left knee is enlarged and painful, and he complains of pain and uneasiness about the loins. The treatment of the present case was not complex: an emetic was given at the commencement; blood was drawn from the arm during the stage of ardency; the quantity abstracted, and the effect produced, are not noted in the register. After the fever has subsided, gangrenous appearances being manifest, Peruvian bark and vitriolic acid were given internally in quantity, with liberal allowances of wine, &c. The whole body was washed frequently with spirits of wine and camphire; the nose and parts of the body where the gangrenous

sion into close cavities, among the Russians, than among any other class of men who have fallen under my observation. The Russian soldiers were persons of sound constitution; that is, free from actual organic disease; they were not of that elastic constitution, which sustains a continuance of diseased action, without yielding to effusion—serous or suppurative.

The above summary comprehends a few points of the history of what related to the health of the Russian auxiliary force, while it remained in cantonment in the Islands of Jersey and Guernsey. The fact appears demonstrated, if I am not mistaken, that the prevailing disease among the Russian soldiers was radically the gastric bilious remittent fever of wet countries, changed from its radical character by the circumstances connected with a mass of persons accumulated in the 'tween decks of transport ships; and, while changed in character by the means stated, rendered virulently contagious by the artificial circumstances which occurred during a tedious passage at sea.

The fever, now adverted to, was one disease: it was treated differently by the different persons, or class of persons to whom the medical

appearances were most conspicuous were covered with lint or cloths wet with camphorated and turpentine embrocation.—This patient continued invalid and under regimen for upwards of two months: he re-assumed his duty before he embarked for his native country.

charge was committed. I only state the outline of the practice, and the result.

1. Where this disease was treated according to the more common method of treating contagious fever by British practitioners at the close of the last century, viz. by opium, wine, bark, camphire, aromatic and opiate confections, occasional blisters, and other stimulants, internal or external, the mortality was unquestionably great. I cannot now, having lost the hospital returns, state the precise proportion.

2. Where the treatment was committed to Russian surgeons, the mortality was comparatively small. This is the fact, as it stood on the face of the hospital returns. I must, however, observe, that the virulence of the disease had begun to decline, before the Russian medical staff arrived in the Islands in such number as to admit of their taking direct charge of the sick; and farther, that, when they did take charge of them, they acted under the inspection, and occasionally under the suggestion of the British medical inspectors, who were expressly appointed for the superintendence of the medical concerns of the Russian auxiliaries. The rule of practice of the Russian surgeons was the rule which obtains, or which did obtain celebrity in Germany at the time, viz. blood-letting in small quantity, emetics at the early stage, purgatives rarely, diluting and cooling drinks, viz. barley-water with nitre, imperial,

&c. at late periods, blisters, camphire and bark; the bark and camphire in a quantity that could not do either much good or harm. The mortality, as already observed, was not high, and even some recovered beyond expectation, from retrograde tendencies threatening stagnation in the veins. But though mortality was not high under the Russian mode of treatment, the cure, unless some other aid was given than what belonged merely to the Russian system, was tedious and not unfrequently imperfect. Conversion into diarrhea, effusion of water into close cavities, or the cellular membrane were common appearances.

3. Where the patient was submitted to medical care within twenty-four hours from the time of the attack, and where he was treated according to the principle inculcated in this work, the course of the disease was cut short, the powers of the constitution so little impaired by the effect of the remedies, or the disease's continuance, that he was ordinarily in a condition to return to his duty within eight days in perfect possession of himself. Blood-letting was not always, perhaps not even generally employed on these occasions; it was, however, often enough employed to show that it is safe and efficacious in contagious as well as in endemic fever. It was employed on some occasions to great extent, and with decided effect upon the course of the disease; and, in several

cases, which seemed to be desperate, that is, where the blood appeared to stagnate in the veins of the extremities, or in the exterior of organs of spongy texture, the auxiliary good effect was conspicuous. Emetics, preferably antimonial, followed by purgatives, viz. jalap and calomel with James's powder, or compound powder of Ipecacuanha; blisters to the forehead, temples, and nape of the neck, with warm and cold bathing according to circumstance, constituted the principal of the remedies employed for the cure of this disease. They were sufficient for the purpose, where the disease was submitted to treatment at an early period. Peruvian bark, aromatic bitters, occasional purgatives, emetics, exercise in open air, and, in an especial manner, warm and cold bathing, alternated according to the Russian mode, were mainly conducive to the prevention of relapse and secure re-establishment of health.

The loss of the Russian troops was not, upon the whole, high, if the nature of the disease and the circumstances of the subject be duly considered. It was, upon the whole, higher in Jersey than in Guernsey, except for the first four weeks. The returns, as already stated, are lost; but, as proof that the disease was not in its own nature a fatal one, I may add that, in a small hospital, near Delauncey barracks, calculated for sixteen or eighteen beds, always full of the more urgent cases, and which, from

the beginning of January to the beginning of March, did not receive fewer than fifty persons, no one died. This hospital was under the immediate care of Mr. Struvé, who had been assistant-surgeon of the Hompesch Hussars in the island of St. Domingo, and who was then stationed in Guernsey. He acted as a practitioner under rule No. 3. The regiment of Major-General Emmé was the most sickly of the regiments which were quartered in Jersey. Its sick were received into the poor's house at St. Helier. They were ostensibly under the charge of the surgeon of the regiment; but the difficult cases were treated by the British inspector of hospitals, Dr. Borland, who had the medical charge of the division quartered in this island. The disease in Emmé's regiment was at one time very virulent; the loss by death was very considerable.

SECTION IV.

A Summary of the History of Contagious Fever, as it appeared at the Army Depot of Recruits and Invalids at Chatham and the Isle of Wight, between the Month of November, 1800, and the Month of May, 1802.

The British military depot of recruits and invalids consisted, in the year 1800, of a mixed

mass of people, viz. recruits destined for regiments which were abroad, prisoners confined on account of desertion and other military offences, added to which, was a proportion of invalids, sent home from foreign stations on account of old age, or bodily infirmity. The writer of this analysis was appointed to the medical superintendence of this depot, which was then at Chatham, in the month of November, 1800; at a time when it was more crowded with recruits than it ever had been. The recruits were subjects of the united kingdom, viz. English, Scotch, and Irish. The Irish were of two descriptions, viz. one, recruited by regular officers, collected at Geneva barracks, and from thence sent to England in vessels belonging to government; the other, raised by contract, at so much a head, landed at the nearest ports on the English coast, and despatched to the depot at Chatham on the outside and inside of coaches—almost without an interval of rest. The recruits sent from Geneva barracks were rarely in health at the time of their arrival at the depot. The vessels, by which they were conveyed, appeared to be infected with seeds of disease, at least, contagious fever generally existed in the cargo at the time of arrival, either commencing, or in progress—sometimes virulent in its nature, and far advanced in its course. The contract recruits were free from contagious fever; but harrassed

by an inconvenient sea passage, and fatigued by travelling, night and day on stage coaches, diseases, the consequence of fatigue and exposure, laid hold of many of them.

Recruits arrived at the depot in great numbers during the year 1801 ; and, as the class of people, which fills the ranks of the British army, is rarely instructed in the arts of personal care, and, as it was as yet unacquainted with the rules of military discipline, and the restraints of military economy, it is reasonable to conclude, that it was exposed in a crowded garrison, to the action of many of those causes which produce sickness. The barracks, placed upon the declivity of a chalk hill, consist of different ranges of building: they are double houses, consequently do not admit of thorough ventilation. They are in other respects well-built barracks—substantial, and, if not over crowded, might be supposed to be healthy. Contagious fever was, as already observed, brought into the garrison by almost every importation of new subjects from Geneva barracks. Circumstances were such, at the time, as particularly favoured its propagation. Besides damp and foggy weather, favourable to the spreading of infection, something like epidemic influence existed at the beginning of the year 1801, which obviously modified the form of the disease, if it did not tend to multiply the radical cause of its existence. Small pox and meazles made their

appearance in the month of January:—they were both of a bad kind.

Many of the cases of fever imported from Geneva barracks in Ireland, were considerably advanced in their course before they were received into the hospital at Chatham; which was then, in fact, only a temporary hospital; that is, a certain number of barrack-rooms set apart for the reception of the sick. They were not, as things are in Great Britain, bad hospitals for sick of a certain description; they were not, on account of defective ventilation, well calculated for the reception of cases of contagious fever.

Where the contagious fever which prevailed in the garrison at Chatham in the year 1801 was left to itself, treated by feeble remedies, or treated by means of opium, bark, wine, and other stimulants, the course was sometimes rapidly fatal, sometimes protracted and of uncertain issue. As illustrative of the fact, I extract a remark from a note-book, viz. that early in the month of January, a person who had been feebly treated in this form of disease, died about the twentieth day of the illness; the skin dry and yellow, as in the yellow fever of the West Indies; the tongue black, dry, and parched, the venous system in a manner paralysed, the blood stagnated in the extremities, as in a case of gangrene.

The disease varied in degree of intensity

while the depot remained at Chatham. The mortality bore, upon the whole, the proportion of one to thirty-two, from the beginning of March to the 10th of July. One in thirty-two may be considered as a high degree of mortality from contagious fever, where the sick are seen at the commencement of the illness, and where they are treated with decision when seen. As the case was, the progress being often considerably advanced before any thing was done, and the means which were under command for promoting recovery not being propitious, I hold it to be low comparatively. The disease was prone to relapse: the establishment was unprovided with what was necessary for the prevention of it.

The Army depot was removed from Chatham to Park-hurst barracks, in the Isle of Wight, in the year 1801. Park-hurst barracks are erected upon an unsheltered common, near the road which leads from Cowes to Newport, and within a mile of the latter place. The site of the barrack is of sufficient declivity to give current to the moisture of the soil; the superficial soil is of a loose texture, which imbibes water like a sponge, and which retains it in its texture until it be exhaled by the heat of the sun. The superficial layer, which is generally about one foot and a half in thickness, rests, for the most part, on a bed of compact clay; which may be moistened by water, but which, not being

permeable, is not made dry by ordinary draining. The whole of the environ is mire in wet weather; in some places absolute bog, so as to be scarcely passable. The parade for the troops at this barrack was only half finished; the streets between the barrack rows, were in a similar state; covered with a layer of chalk, and over the chalk, with a layer of bad gravel. There was no pavement any where; and, with all the care that could be taken, shoes, manufactured for the military, were not sufficient to keep the feet in any state of comfort during the wet weather which prevailed in the latter months of the year.

The barracks on Park-hurst forest were of slight structure, viz. clap boards, with weather tiling. They were of one storey only, the floor not raised by more than one step from the street. The interior of each barrack was divided into two apartments, namely, a messing room, arranged in the manner of a tap-room, and a sleeping room, provided with two tier of platforms, as in transport ships. There were no fire-places in the sleeping-rooms; and, as the soldiers—fifty or sixty in number, were stowed as thick as they could lie in a small and close apartment, with a hole near the roof, intended for ventilation, the exhalation from the lungs, condensed in quantity, trickled down the walls in copious streams; so copious that, according to the soldiers' phrase, the hands might be washed

without going to the pump. Besides the condition of the sleeping-rooms now noticed, the fire-places in the messing-rooms were not placed advantageously for the diffusion of heat. Had it been otherwise, the barrack allowance of fuel was not sufficient to support fires that were capable of thoroughly warming the apartment. If the soldier entered the messing-room in wet clothing, (and that was almost a daily occurrence,) the vapour diffused itself from the clothing into the warmer atmosphere in such profusion, that the messing-rooms by day, as well as the sleeping-rooms by night, were literally steam-baths, filled with vapour from wet clothing and human lungs. Park-hurst barracks appear, by what has been now said, to have been, in reality, a weather-proof encampment, subject to contamination of air as a crowded tent, or crowded transport ship. But, besides the injurious effects which might be produced upon the health of the troops, by the condition of the barracks as then existing, it may be proper to observe in this place that, about four hundred of the recruits were, in absolute want of room, constrained to remain under canvas on the common until late in October. The weather was then uncommonly wet; few days were without rain during October, November, and part of December. There was frost in the latter part of December; hard frost, with snow, in January, 1802.

Such are the leading circumstances connected with the accommodation of the troops in barracks; the means were ill-contrived, or inadequate in extent; the means of accommodation for the sick were similar. The house built purposely for an hospital, occupied a bottom, or cup-like depression, within a few hundred yards of the barracks. The soil of the site was literally bog, abounding with land-springs, even within the hospital inclosure. The building itself consisted of six long wards, each ward calculated to receive twenty persons. Besides these, four rooms for nurses were opened for the reception of sick; each of which received two patients, with an attendant. The whole extent of Park-hurst hospital was thus capable of affording accommodation to no more than one hundred and twenty-eight sick persons, at the allowance of six feet per man. The number of sick amounted, at different times, to six hundred, five hundred of them at least, requiring treatment that could only be administered effectually in a properly equipped hospital. A building, originally a mill, on the Medina river, was added to the hospital establishment on this occasion. It was set apart for the reception of surgical cases, and other slight forms of malady. The hospital at Park-hurst, as contiguous to the barrack, was reserved for the accommodation of febrile diseases; and, as these often amounted to three

hundred, the hospital was necessarily overcrowded, even while many, not sufficiently recovered, were sent to one of the common barracks, appropriated for the reception of the convalescent. Besides deficiency of space, the wards were not constructed according to the best plan of hospital construction. The base of the windows was too high above the floor to admit of a perfect and thorough ventilation; and the fire-places were so placed, and so constructed as to diffuse little of the heat of fire into the body of the ward; the remote parts scarcely felt its influence.

It will not be contended by any one who views the locality, and who considers the reasons of things in their own nature, that Parkhurst forest affords an eligible site for the erection of military barracks, either in a view of convenience or salubrity. The locality, I think, I may venture to say, is not good originally. It is capable of being improved by art; and it has been in fact, improved, in so far as labour is capable of improving it. The environ of the barrack is now cultivated, planted, or converted into garden-ground; the parade is covered with a coat of gravel, and highly dressed; the barrack sleeping-rooms are furnished with fire-stoves, and moveable bedsteads instead of tiers of platform. Another storey has been added to the hospital; the wards are arranged for the accommodation of sick of different classes; open

fire-stoves are brought into the centre of the larger wards ; a great deal has, in short, been done since the year 1801, to render Park-hurst barracks and hospital convenient and comfortable ; and they appear now to be comfortable, in so far as the boggy nature of the soil, the bleakness of the position, the errors of the original plan, and the flimsiness of the original structure admit of comfort and convenience.

The sick list was high at Park-hurst barracks, in proportion to the strength of the garrison in the year 1801, viz. nearly one to four during the months of October, November, and December. Where sickness is proportionally high in a crowded garrison, at least where it continues high for any length of time, it often acquires the property of propagating itself, (if it did not possess it originally,) in consequence of accumulation. This is more commonly observed in fever of the gastric form, the material of which, abounding in the soil at Park-hurst forest, was called into activity by the revolution of the season, and particularly by the circumstances under which the subjects at the depot were placed. The bilious, remittent, or gastric fever, the dysenteric, the pneumonic, measles, scarlet fever, and fever of direct personal contagion, imported from Ireland, or generated in barracks, prevailed to extent during the autumnal months: they were generally formidable in their kinds. The circumstances of season,

and the circumstances of subject, might have been thought sufficient to produce a disease of a somewhat aggravated kind from their own power; but besides this cause of common power, the marks of a secret epidemic influence were conspicuous from the middle of September until near the end of December. As the cause of epidemic influence is not visible, I do not pretend to form a conjecture concerning its nature. I only observe that the countenance was dark on this occasion, as in sea scurvy; that the skin was often cold, dry, marbled, and inanimate; the tongue red, and generally clean; the pulse ordinarily more frequent than natural, but not frequent as a febrile pulse; it was inelastic—without energy in mode of contracting; blood drawn from the veins, was of a dark colour, generally of diminished cohesion.

A detachment of recruits arrived from Ireland on the 10th of August. Contagious fever prevailed among them to considerable extent at the time of arrival, and it spread so fast, that scarcely one in six was free by the 10th of September. The wards in Park-hurst hospital were then crowded beyond a just proportion; the air was offensive to the senses, and not innocuous to the health of those who came in contact with it. The medical officers, the nurses, and the orderlies, scarcely knew health, though they were not all attacked with

fever. Besides fever in regular form many experienced unpleasant sensations of various kinds, apparently originating in the action of a febrile cause, viz. chillinesses, nausea and sickness, purging, flatulence, indigestion, distension of the hypochondria; costiveness, or defect of power in expulsion of the feces; headache; flushing of the face; giddiness of the head; heat and pain of the eyes; dreaming at night, sometimes amounting to wanderings of delirium; an unusual flow of spirits on some occasions; glistening of the eye; animation of the countenance; a brilliant tint of complexion, and alacrity in bodily action beyond what was usual to the individual.

The common causes of sickness abounded at Park-hurst barracks in ordinary circumstances; something of extra epidemic influence obviously manifested itself from the middle of September until late in December, the impression of which seemed to give a gangrenous tendency to the acts of the habit. Fever did not always in this case begin with symptoms of violence; it was always dangerous. If it was not arrested, or, if another tendency was not given to its character at an early period, it frequently terminated fatally—rarely within the first seven days, generally in relapse, and sometimes not until after repeated relapses. The terminations were apparently connected with marks of stagnation in the veins, advancing slowly and gradually in some cases,

supervening suddenly and acting upon an internal organ, or an external part, analogous to local gangrene in others. The invasion of this disease was ordinarily marked by sensations of coldness of long continuance, rather than by shivering and shaking. The flushing of heat and ardency of the skin, which succeeded to the cold fit, were rarely to great extent: the pulse was ordinarily more frequent than natural, but not frequent as a febrile pulse: it was in general small, inelastic—without force in expansion, or energy in contraction. The skin was generally cool—deficient in life and animation; it was sometimes cold at the extremities, blue, or livid, as in sea scurvy,—dry or damp; sometimes dingy in colour, and greasy to the touch.—The countenance was heavy and dull—vacant of expression; the *tunica albuginea* of the eye was sometimes preternaturally white and pearly. The tongue was seldom foul; it was often unusually red, sometimes moist, sometimes dry. Nausea was common; actual vomiting was rare:—where it did occur, it was not easily restrained. The bowels were, for the most part, open—even to purging; the stools watery and dark rather than feculent. Pain was felt in the head in most cases; it was ordinarily of the dull and oppressive, rather than of the acute and rending kind. The limbs and joints ached more or less severely. The erect posture was supported with difficulty; there was little of that ticklish

mobility, which does not bear a change of position without fainting, or strong tendency to faint. Such is the outline of the more common form of contagious fever as connected with the gangrene base of temperament, and as manifested among the recruits of the army depot in autumn 1801.

The cure of this form of disease was instituted on the common base of cure for febrile diseases; the manner of conducting it, was modified according to the existing circumstances of the case. The weather was cool, generally damp and foggy during the autumn 1801. As the accessory condition of cold, damp and foggy weather appeared to aggravate the morbid tendency then existing, it was thought proper in adjusting the means of cure, to introduce the patient into a bathing room, in which there was a strong fire, a dry and a comparatively high temperature. It was moreover directed that the patient's person should be purified by being washed; or rather that it should be scrubbed with brushes, soap and warm water. When the grosser impurities were removed from the skin, the superficial sensibility restored by the action of heat and scrubbing, immersion into a warm bath was considered as the next step in the proceeding. After a few minutes of immersion, and while the body was yet immersed, a vein being opened in the arm, the blood was allowed to

flow from it until there was evidence that some change had actually taken place in the existing condition; that is, until the pulse opened and expanded, until the countenance resumed its animation, or other change was observed, which indicated the presence of a new impression on the action of the system. The blood itself frequently changed appearance under the act of abstraction, viz. from a dark to a florid red; and together with this, sensation of ease and alacrity, not unfrequently usurped the place of languor and irksomeness during the act of the blood's flowing. When the change was effected, the arm being bound up, cold water was poured upon the head and shoulders, while the lower parts of the body were yet immersed in the bath. When this was done, the patient was wiped dry, sometimes rubbed with warm oil or volative liniment, carried to his ward, laid in bed and suffered to rest for some hours; unless where signs of repletion or congestion in the organs of the abdominal cavity suggested the propriety of making an outlet, by means of emetics or purgatives.

The course of the disease was arrested, or its character was changed by the effect of the proceeding now described, provided the means were applied at an early period, and provided they were executed under a proper comprehension of the principle which gives effect to the act. But if the favorable opportunity had been

suffered to pass, so that the disease had attained an advanced period, after its own manner of proceeding, before any thing was done, the chances of success were diminished: they were even uncertain with the best exertions of the art. I shall state the case, in a few words, according to what frequently happened. At an advanced stage of the disease, whether in the first septenary period or in relapse, where the skin was cold, livid and dry, or cold, greasy and damp, where there were circumscribed lividness, vibices and petechie on different parts of the body, where the pulse was small and sunk, weak and inelastic, frequent or otherwise, the tongue red and clean, or black, dry and covered with a sooty pellicle, the general secretions and excretions diminished or changed, the appearances such in fact as indicate slow circulation, and threaten stagnation in the veins generally, or the occurrence of gangrene on a particular part, the remedies employed were varied according to the condition of the subject; but in general, fomentations of the extremities, &c. with flannels wrung out of hot water were the first called into use. After fomentation had been continued for some time, abstraction of blood in small quantity, under the application of external heat, and with the aid of internal cordial, was considered as of principle dependence. When the stagnated fluids were moved, and susceptibility to im-

pression in some measure restored by fomentations, bleeding, external heat and internal cordials, ablution, or aspersion of the surface with cold water was next called in aid; after ablution, frictions of the skin, with warm and stimulating oils, were not unfrequently employed as auxiliary of the general effect: fermenting poultices, or embrocations with spirits of wine and camphire, oil of turpentine, tincture of myrrh, and aloes, or Peruvian bark were applied to parts that gave indication of approaching gangrene, or that were already gangrened. Camphire, ammonia and opium, were given in bolus, variously combined in large doses often repeated; mineral acids, wine, bottled porter, spruce beer, cyder, also were given freely.—The curative proceeding was complicated, viz. depletion and stimulation variously combined, and applied to the case with scrupulous exactness under the eye of the physician himself, The damp of the locality, the season of the year, and more especially the contaminated air of the crowded wards, were unfavourable to the operation of medical means. The drawbacks were numerous, and of great weight; but, in spite of their number and force, and they were great during the months of October and November, the evidence is demonstrative that the principle acted upon on this occasion is founded in truth. Where correctly applied,

it was applied with decisive effect upon the issue of the disease.

Relapse was common in this form of disease, sometimes such as may be called general fever, sometimes more directly local. The movement, in the relapsed form of general fever, sometimes tended to the surface with expansion in the action of the circulating system, and crisis at a regular period; sometimes retrograde, it tended to the centre, degenerating into slow movement, and finally terminating in stagnation in the veins. The relapse often appeared in a local form, sometimes indicating excitation, oftener oppression. It occurred occasionally on the cerebral and thoracic organs; most frequently on the abdominal, generally upon the coats of the alimentary canal, sometimes on the mucous membrane, producing copious, bloody and offensive evacuations by stool; sometimes on the peritonæum, producing a mode of action which terminated rapidly in stagnation or gangrene direct.

The mortality from this disease, from the 18th of July, to the 31st of December, 1801, inclusive, amounted to one in twenty-three and a half. One in twenty-three may seem to some to be a high rate of mortality from contagious fever, I believe it to be so in fact, where the circumstances are common; but in the present case, the disease was peculiarly aggravated in

its own nature during the months of October, November and December, and while aggravated, no adequate means existed of doing justice to the sick. The more threatening of the cases only were admitted into the hospital wards in want of room; and of these, some from Ireland, and others from outposts, were almost extreme at the time of admission. The air of the wards was impure; the wards themselves were cold, uncomfortable and adverse to the progress of convalescence, in so much, that when I look at the circumstances, and compare the result with what has occurred in other situations, I have no cause to speak doubtfully of the utility of the medical proceedings that were then adopted. The treatment I may remark was different from that commonly approved at the time. As such, it was supposed, and even asserted to be injurious. An abstract of the returns of the hospital are before the public; they speak for themselves, and they must, I think, be admitted, in the opinion of the most prejudiced, to furnish proof that the allegation of injury was not founded. Experience has, I believe, proved, on numerous occasions since that period, that the principle then acted on is a true principle. As testimony that it was not comparatively an unsuccessful one, it is added in this place that no medical officer, nurse, orderly, or hospital servant, died at the army depot hospital, be-

tween the 1st of January, 1801, and the 1st of May, 1802, though, as the hospital wards were often highly infected, those who administered to the sick were often infected with their maladies, several of them repeatedly. I have no official document to prove the precise number of hospital servants who entered the sick wards during this period, but I do not think that I exceed at laying it at sixty, the greater number of them in autumn 1801. Hospital servants could not from the nature of their duties be long sick before they fell under the notice of a medical officer. When noticed, they were submitted to rigorous discipline; and so treated, the disease was ordinarily cut short, the subject restored to his duty in a few days. The fact is correct; and it is a fact of some importance, as proving the utility of prompt measure in effecting the cure of the contagious fevers of Europe, as well as the endemic fevers of tropical climates. It proves moreover that blood-letting, though not so indispensably urgent in the one as in the other, is notwithstanding safe and generally beneficial, as preparatorily of a condition susceptible of the effective action of other means that are salutary.

SECTION V.

Summary remarks on the character of Contagious Fever, which appeared in the British Army at its return from Spain, in the beginning of the Year 1809.

A division of the British army penetrated into Spain on the side of Portugal, in autumn 1808, under the command of Lieutenant General Sir John Moore. It consisted of choice troops in high health, and in a boasted state of discipline. A division landed at Corunna, and proceeded through Gallicia to join Sir John in the centre of the country. It consisted chiefly of second batalions, less highly formed than the first, but equal in military spirit, and upon the whole in good bodily health.

The campaign in Spain was a short one; it scarcely has a parallel in history for misfortune. The rapid disorganization, without a battle, of an army which had been recently extolled for principle and good conduct beyond the example of English armies, can only be supposed to have been effected through the operation of causes of extraordinary power. The causes were strong; those who were present in the

scene, and who had experience of service in other campaigns are alone competent to judge adequately of their real force. The weather was wet and cold; rain fell in torrents; the level country was inundated at the earlier part of the retreat: frosts were severe in December, and January; cold was piercing, more intense than winter cold in England: fuel was scarce; shelter from the weather insufficient; and to sum up the whole, provisions often failed, or were distributed under circumstances where they could not be prepared for use; thus the soldier, while chilled with cold, was also famished in want of food.

As the prosecution of the campaign in the interior of Spain did not appear, in the opinion of the General in chief to be safe or practicable in the then circumstances of the country, it was determined to retire to the nearest sea port, with a view to return to England, or wait for orders where to proceed. The retreat was begun in order; it soon became disorderly through privation, over exertion; and above all perhaps, through chagrin, the companion of retrograde movement. The marches were what are called forced marches; the feeble were left on the road; the more powerful held out and gained Corunna on the 12th of January. The army was then in a manner disorganized: it prepared for embarkation; but prior to go-

ing on board, it fought an action on the 16th, not less characteristic of national courage, than the famed battle of Waterloo.

The embarkation was made during the night which followed the action ; and as it was made under apprehension of annoyance from the enemy, it was made in haste, and not without confusion. The passage to England was short : the weather was boisterous ; the troops had been fatigued during the retreat, and almost famished in want of food. It is reasonable to suppose that, under those circumstances, they spent much of their time during the passage in 'tween decks, indulging rest, or regaling on a full ration of provisions. As the 'tween decks of most of the ships were crowded, the atmosphere could not be other than moist, loaded with exhalation from human lungs. It necessarily became impure ; loss of the energies of health was a necessary consequence of its impurity. The sick list, exclusive of wounded, was considerable by the time the fleet arrived at the first ports in England. One of the divisions touched at Plymouth, and landed a proportion of its sick and wounded. The main body proceeded eastward, brought up at Spit Head, and landed its sick and wounded at Portsmouth. The divisions intended for cantonments in Kent and Suffolk, were detained for some time by contrary winds. The weather wet, boisterous and stormy,

seemed to favour the spreading of the sickness on board the fleet: it in fact, spread so rapidly, that upwards of two thousand persons were sent on shore before the end of the month, many of them dangerously ill.

There was not, I believe, a single regiment in the army which returned from Spain which did not suffer from sickness in a greater or less degree. There was difference in the degree, and in the character of the symptoms, according to the nature of the circumstances to which the different corps had been exposed. The Spanish troops, which were under the command of the Marquis de la Romana, were scattered among the mountains of Gallicia; according to report they were in a sick and weakly state. Some of the British regiments were supposed to have communicated with them; at least to have crossed their routes and occupied the quarters in which they had lodged. This was said to have been the case with the 76th regiment more than with any other. Whatever the real cause may have been, the fever which appeared in the 76th regiment was aggravated in kind, more aggravated perhaps than in any other corps that fell under my observation.

This disease, whether the cause of it was received directly from the body of a person actually sick, or from the bodies of men under

peculiar circumstances of health, but among whom fever had not yet manifested itself in ostensible form, was decidedly contagious, and capable of rapid propagation as soon as it became febrile. A fact, which was observed on board of his Majesty's ship the *Victory*, serves to illustrate the subject. The 8th regiment of foot was sent on board of the *Victory* on the night of the 16th; and, as it was principally those who had taken part in the action that were sent on board of the vessel, it cannot be supposed that they were sick at the time of embarkation. The *Victory* was, in herself, a healthy ship, and had, at the time, a select and healthy crew. She sailed for England as soon as the embarkation was completed; and, after touching at Plymouth, arrived at Spithead early in February. Sickness made its appearance among the soldiers in the course of the passage. From the shortness of the time, the disease could only be supposed to be in the most recent stage. It appeared, notwithstanding, to have communicated itself to the sailors, among whom it spread so rapidly, that upwards of one hundred were in hospital before the end of the month. The disease, in so far as I could judge, from transient visits, was more violent; that is, exhibited stronger marks of excited vascular action among the sailors of the *Victory*, than it usually did among the soldiers of the army.

The form of the disease was here, as in other cases, influenced by the concentrated or diffused state of the cause at the time it was applied ; by circumstances connected with the manner of the patient's life prior to the formal attack ; and especially by the means employed with a direct view to cure. The mortality appeared to be greatest at the greatest depots of sick, and in hospitals that were less perfectly ventilated. It was, upon the whole, less in regimental than in general hospitals ; and it appeared moreover that those corps, which had the longest land route to their destined quarter, suffered less from sickness, at least had less mortality from sickness than those whose cantonment was near the port of debarkation.

The character of the fever, in so far as I had the opportunity of observing it, (for, having no charge of sick, or official authority, my visits to the hospitals were only transient,) was not different from the contagious fever which occurs in armies on many occasions ; it did not appear to be one of the most aggravated. Personal fatigue had been great during some part of the retreat ; the supply of provisions was irregular ; those, to whom field service was new, considered the hardships of the campaign to be unparalleled. It is a law in the constitution of the animal frame, that sudden transitions from one extreme to another, is dangerous to health ; the

truth of it was strongly exemplified in the present case. Rest and full living, after fatigue and privation, were here the ostensible causes of sickness: the restless and the active in mind and body, generally escaped. The sickness was general among the troops; it was purely artificial, exhibiting no appearances of epidemic malignity. The action of the vascular system was seldom highly excited as febrile action; the heat of the surface was seldom much higher than natural; the tongue was often white and moist, sometimes red and clean, during the early period; black and dry, or covered with a black pellicle in the more advanced. The skin was usually dry, sometimes withered, sometimes dingy and dark—not unlike the skin of persons in sea scurvy. The pulse was not in general frequent as a febrile pulse; rarely irregular; it was often feeble and unexpansile. The functions of the alimentary canal were more or less disordered. Sometimes there was costiveness; sometimes purging, so considerable as to obtain the name of dysentery. Respiration was sometimes calm and easy; sometimes hurried—oppressed to such extent as if the disease had its seat among the organs of the thoracic cavity. A dark, mahogany-like colour of the skin and countenance was observed in many from the beginning; a tendency to gangrenous explosion on the extremities, particularly on the feet,

at a certain period of the course, if not peculiar, was more common than I have ever observed it to be in any other class of people: the explosion appeared to be in reality a form of crisis. The febrile commotion abated or ceased when the gangrene made its appearance: the result was not unfrequently fatal as a consequence of gangrene. The leading symptoms were pneumonic in many instances; the favourable termination was then for the most part accompanied by expectoration which, viewed superficially, was considered as matter of abscess, but which, in reality, was a critical secretion of puriform or vitiated mucus. Delirium, spasms and subsultus were prominent symptoms in some; in such, the fatal termination, where the disease terminated fatally, was often ushered in by convulsion. The disease appeared in dysenteric form in numerous instances; in some primarily; in many secondarily, or by relapse. The tongue was black and dry in many of the dysenteric, particularly at late stages: hiccup was then a frequent occurrence; yellowness, indicating deranged action in the biliary system, was not unusual. The action of the vascular system was not, as already observed, much excited in this form of fever: where it was, hæmorrhage or copious perspiration occurred not unfrequently, and where they

did occur, crisis was ordinarily the consequence.

The changes, in so far as I was able to ascertain, were at critical periods, viz. fifth day, or seventh. The change was sometimes clear and distinct, oftener obscure, so as to pass without the notice of those who observe things superficially. Relapse occurred at different intervals after termination or abatement—sometimes immediate, sometimes not until after several days. The total duration of the disease was seldom less than a fortnight, often three weeks, beyond three weeks in many.

The method of treatment appeared to vary considerably among the different practitioners, who had charge of sick at Portsmouth, and in the hospitals in the vicinity. The theories, which physicians hold concerning the nature of diseases, influence practice directly or indirectly. In the present case, the idea that contagion implies debility, seemed to predominate, and as such, giving a general tendency to practical proceeding, laid a basis of stimulation; but though stimulation was the more general outline, there were some who overcame their prejudices, so as to abstract blood with freedom on this occasion. They were not many; and it cannot perhaps be said that the effect was visible on the face of the hospital returns. The affusion of cold water was employed on some occasions with benefit;

in others with little advantage. The mineral acids were held to be useful by many: mercury, viz. calomel internally, and friction with mercurial ointment externally, had the confidence of several. The mortality of the disease was, upon the whole, high in proportion to numbers. The result, in the abstract of returns that have come under the eye of the public, stands as one in seven from fever, one in three from pneumonia, and one in three and a quarter from dysentery; one in five from the whole. It was one in seven among medical officers, and said to have been still higher among nurses and orderlies.

DISSECTIONS.

Dissections were made in several instances; and according to the report, the vessels of the brain were turgid in some; in others no turgidness was remarked. In one who died in relapse there was serous effusion on the surface of the brain and more than the usual quantity of water in the ventricles. The lungs adhered to the pleura or diaphragm in many cases;—in some there was abscess; in others no trace of disease. The liver was sometimes indurated or changed in structure; sometimes healthy and sound. The gall bladder was often distended,—the bile black, dark, or deep yellow. The spleen was

often soft and broken down into a jelly-like mass, almost always of changed structure. The kidneys were often paler than natural; the bladder of urine empty and flaccid. The stomach and intestinal canal were variously diseased; the stomach sometimes distended with air; the intestines distended, sometimes ulcerated interiorly, even gangrened: the pancreas was often indurated.

CHAPTER II.

General Remarks on the Source and Application of the Causes, which act adversely on the Health of the Military Class of the Community.

I HAVE endeavoured, in the preceding pages, to give a summary of the rise and progress of contagious fever, as it prevailed in the British army, in the course of the late war—in so far as it fell under my observation. As the same or similar causes have produced the same or similar effects in other situations; and, as they will continue to produce them at other times and in other circumstances, I consider it to be important to the interests of humanity, though not expected to be immediately operative of effect, to search into the sources from which the calamity arose, the causes through which it was propagated, and the means through which it was aggravated, on many occasions, from slight beginnings to the most extreme degree of concentration. The exposure of the errors of those in power may be dangerous to the individual who makes it: if the exposure be truly made, the danger is not in the writer's calculation; if

falsely, punishment is the reward, and he is prepared to receive it to the full extent.

The strength of British regiments was reduced to a low standard soon after the termination of the American revolutionary war. It was then thought expedient that a basis should be preserved for the reception of recruits, through a large number of what might be called skeleton regiments, rather than that the army should be augmented by entire new corps on the first exigence of service. There is something like reason in the measure; and, with good management, it might have produced good results. The declaration of war, 1793, came suddenly; the ordinary process of recruiting was found to be insufficient to fill up the ranks to a just standard; the exigencies of service were urgent; new expedients were devised to meet them. The spirit of commerce penetrates through all ranks of the British nation; and for the most part models the form of national action in all its expansions. The principle of the manufacturer, which seeks to augment quantity without much regarding the intrinsic property of the quality, predominates: it was the principle of the Minister for War on the present occasion. His genius was exerted to fill the ranks with number, not to select and fill with numbers that promised to be useful in service. In prosecution of this view, it would appear to have

been suggested to him, that the army might be rapidly augmented by raising men under the name of independent companies. These, to be raised in the shortest time possible, fell principally to the lot of men of wealth, mostly young subalterns of high connection. Rank was the bait; money was the engine. Every two-legged animal was deemed fit to be a soldier; and, to facilitate the collection of such materials, jails, workhouses, and manufacturing towns, the receptacles of the refuse of the kingdom, were laid open to the recruiting officer. The ranks were filled; the muster made and verified; the independents, made soldiers, were transferred to regiments of the line. Had the question been to bring together and clothe in uniform, a given number of the human race, the work was done: if, to form an army, be to select persons who are of sound and hardy frame to sustain the fatigues of war, and of strong and patriotic mind, impressed with the importance of defending the honour of the country, no progress was made. The muster-roll was extended; the effective strength was diminished, or encumbered by the accession of sickness, and the infection of vice, so as to counterbalance the increase of numbers. The origin of contagious fever was traced, in many cases, to the incorporation of recruits from independent companies; degenerated morals, so conspicuous at the early

period of the war 1793, was ascribed, in the opinion of officers of discernment, to the same source.

The ranks of the army had been filled, to a certain extent, by incorporating recruits from independent companies into regiments of the line: the increase was not equal to the exigence. As the independent companies had been raised in a short time; and, as there did not appear to be any other object in the eye of the minister for war, except number, a similar practice was adopted for raising entire corps; the exigencies of the service were urgent; they required to be relieved by every possible expedient. The adoption of the measure opened a field of speculation to every adventurer, who possessed wealth and influence, or who was distinguished for address in the arts of recruiting. Colonels and corps rose up as by enchantment. If the capacity to render efficient service in the field be admitted to be a criterion of the utility of a soldier, many of the new corps were forms without substance; transferred, nearly as soon as raised, to other corps: they vanished without a name. The levy was made by contract; rank was the bait; money the engine which filled the muster-roll. The contract was, in many cases, imperfectly performed. Where otherwise, the character of the army was still depreciated, inasmuch as it was submitted to the operations of mercantile adventure, literally to gaming on a

military field, which was, until then, in some measure, considered as a field of service and honour.

Besides the introduction of disease into the ranks of the army by persons recruited from infected sources, various other accessories, contingent to military service, served to generate, propagate, and concentrate the matter of contagion to the highest possible degree of concentration. Among these, negligence in examining and ascertaining the state of health of recruits previously to the incorporation of entire corps, or previously to embarkation for foreign service, was chiefly noticeable. By neglect on this head, the seeds of contagious disease introduced into the corps, or introduced on board of ship in open or latent form, broke out into activity in a crowded barrack: they broke out, and gained strength rapidly in the confined air of a crowded vessel. The virulence was aggravated, on many occasions, to a most extreme degree; so as to infect the ship and leave the seeds in legacy to those who succeeded in future embarkations. These, and many other of the personal concerns of the soldier, belong to the subject of military economy, upon the discussion of which, I cannot enter at this time. Contagious fever, I think I am justified to say, is an artificial disease. It has no place in a well-organized and well-disciplined army, while the organization is preserved, and the discipline

enforced. It arises from various causes, some of them more, others of them less obvious; viz. carelessness and indifference, error or prejudice, ignorance or self-opinion in the great, who do not condescend to be instructed by the humble. The words of physicians are ordinarily words spoken to the wind. It even rarely happens that the physician is permitted to arrange, or furnished with the means of arranging the concerns of his own department. The sick soldier is a nuisance to the military eye; as such, he is removed from the view, conveyed to an hospital, or receptacle of sick, and put under medical discipline for the recovery of health. These receptacles of sick are formed for the ostensible purpose of saving human life; they are, in a great number of instances, to be numbered among the causes which principally conduce to its destruction. The contagious fever of armies is not a fatal disease in its own nature; that is, as left to itself in the open unsheltered field; its ravages are dreadful, even as treated by the best medical skill, in the crowded and ill-ventilated wards of general hospitals: the proofs are numerous and explicit in almost every scene of service.

It was believed, and not without evidence that the seeds of contagious fever were introduced into many of the regiments of the line in 1793, by recruits from the independent companies. Under the operation of a judicious and compre-

hensive system of economical regulation, the progress of a disease thus introduced, might have been checked: the disease itself actually banished. Good regulations did not obtain at the time; the value of the soldier was estimated on a false scale; and, from that false estimate, measures originated which threatened to disorganize the army. Rank and command were more certainly attained by the money of a school-boy, or the activity of a crimp, than by actual knowledge of military duty and hard-earned experience in the fields of war. Money had purchased one step; and, with money, another was still to be purchased. The chances were watched with eagerness; and the soldiers, which were the subjects of the traffic, passed from hand to hand with the same indifference as counters at a gaming-table. This practice has fortunately given way to a better order of things. The materials of the army are not only better in their own nature, but the economical regulations are better digested, and more rigidly practised than they were at the period alluded to; yet, notwithstanding these advantages, sickness has sometimes been great among troops on service, since the years 1794 and 1795; and with all the lights that might have been derived from experience, it is only of recent date that the practice of accumulating the military sick into general hospitals, a practice demonstratively more destructive of life than the most sanguinary battles in

the field, has been annulled, or only resorted to under necessities.

The seeds of contagious fever were apparently introduced into many of the infantry regiments, at an early period of the war 1793, by the incorporation of infected recruits. Had that not been the case, the circumstances to which the troops were ordinarily exposed, as not counteracted by judicious economical regulation, may be thought to be sufficient to produce all that occurred. This, I consider, in so far as has fallen under my own observation, to be a matter of fact. The troops in Holland in the year 1794, and on Spike Island in autumn 1795, lay on bare and damp ground, or on damp and half rotten straw. They were imperfectly defended from the falling rain by tents of thin canvas, calculated to contain six persons stowed as close as they could lie. The exhalations from the bodies of these persons, of whatever kind they might be, collected and condensed by the external cold, might be supposed to adhere to the canvas. As it is possible that the air within a crowded tent may be contaminated by exhalation from the inmates, it is reasonable to believe that the tent was actually infected, and that the infection was actually transported in waggons when the army changed its ground. This happens not unfrequently in service. The gastric, that is, the bilious remittent, or the dysenteric form of fever, is the direct

product of the circumstances alluded to, particularly in the autumnal season. The gastric is a form of fever scarcely to be prevented from assuming the contagious property, where the subjects of it are crowded together in ill-ventilated tents or hospitals. It was stated above that the general order, which was issued in Holland in summer 1794, implied that every person who was incapable of military duty should be sent to hospital, at every change of position made by the army. It was also stated that orders were given, when the transports arrived at Cove in 1795, that the troops of the expedition should be immediately embarked, the sick separated, and sent to the hospital. The sick in both cases were thrown into apartments, in their own nature unfit for the purpose of hospitals, or rendered unfit by excessive accumulation. The consequence was what might have been expected, viz. an aggravation of the symptoms of the disease beyond what was natural to it, the generation and concentration of the contagious material to a state of high virulence, and the subsequent dissemination of it through the army by a variety of channels. The mortality in the hospitals on the continent, in the years 1794 and 1795, and on Spike Island in the beginning of the year 1796, was prodigiously great. The sickness, no one acquainted with the scene, and capable of tracing effects to their causes, will hesitate to admit, was in a great

measure artificial—the product of faulty arrangement; the mortality, it may be said with equal safety, was principally artificial—aggravated, if not wholly occasioned, by accumulating sick persons into ill-ventilated apartments, under the name of hospitals.—The medical history of the war on the Peninsula is not known to me by actual observation. It is sufficiently known to the public that sickness was formidable, and mortality prodigiously great during the early part of it, when the sick were collected at great depots, called general hospitals. It is also known that the sickness diminished, and that the mortality was comparatively trifling in the latter part of it, particularly after the retreat from Burgos. A new order of things was permitted to have effect at the cantonments of the troops during the winter which followed the retreat. The principal part of the sick were kept near their respective regiments, and treated by the regimental medical officers; consequently they were dispersed in a comparatively wide field. The effect was fortunate; such as might have been anticipated. I have it not in my power to state precisely the relative proportions of sick and hospital casualty during the ancient and the new discipline; but, I believe I am safe in saying, that the commander of the forces owed ten thousand firelocks, through all his future campaigns, to the medical arrangement then per-

mitted to be adopted, and that the annual saving of life to the army amounted to not fewer than five thousand souls: I would not err perhaps, if I said one-third more. It is almost unnecessary to add that, the accession of strength which accrued to the army, from the change which was then made in the system of medical arrangement, was a main cause of the preponderance which manifested itself in every subsequent step of the war. The enemy adhered to the old practice of accumulating the sick at grand depots; and he appeared to have suffered dreadfully, some divisions of the army being almost disorganized by the ravages of contagious fever.

CHAPTER III.

A Summary of Remarks on the Character of Contagious Fever, as it appeared to the Writer, in the course of his Practice, among the People of the Country where he happened to reside,

THE observations made by the author on the causes, course, and consequences of contagious fever among the civil part of the community, are less precise than those which were made upon the military: they are still, it is believed, distinct and authentic; so that they may be added with safety to the stock of informations, necessary to be obtained prior to making the attempt to analyze the history of the disease. The contagious fever is common in Great Britain, perhaps more common than in any other country in Europe. The author has had fewer opportunities of observing its rise and progress than many of the physicians who reside in the populous cities or manufacturing towns; he has, notwithstanding, had opportunities, in the course of a long life, of observing it so often, that he thinks he may be permitted

to form an opinion concerning its real nature. He resided at Stockton-upon-Tees from the year 1786 to the autumn 1793. The town of Stockton was remarkable, at that time, among the towns in England for the spaciousness and cleanliness of its streets, and the interior good order of the dwellings of the poorer class of inhabitants. The manufactures, carried on at Stockton, were on a small scale and well conducted; so as to produce no overflowings of population, dissipated at one time, and necessitous at another. The town was comparatively healthy. Contagious fever was of rare occurrence—only known as imported by vagrants; and, when imported, not observed to spread. The fever of the autumnal months appeared to propagate on some occasions; at least, more than one was affected not unfrequently in the same family; but the real contagious character, in so far as I observed, was never decidedly ingrafted on it. A fever of a marked contagious character appeared, in the interval between 1786 and 1793, at Hartlepool, a town on the sea coast, about thirteen miles from Stockton. It is not known exactly in what manner it was introduced. It was considerably aggravated in symptoms, but it was not mortal to great extent. It continued in greater or less activity for upwards of nine months; and it took itself off silently, without any effort being made on the part of the inhabitants to banish it. It was

distinctly contagious. But though contagious, something new or unusual in the constitution of the atmosphere was necessary to give activity to its contagion; for it ceased to act after a given time, in the midst of abundant materials ready to receive its action. A disease of a similar kind appeared at the same, or nearly at the same time at Whitby, on the north coast of Yorkshire. It lasted for a long time, prevailed to great extent, extended to several of the more wealthy inhabitants, particularly to such as communicated with the sick. It raged, as it were, epidemically for a time; and, when it ceased, it ceased without any extraordinary means being used for its expulsion, or any visible signs being perceivable in the atmosphere which could be supposed to account for what happened.

A gastric form of fever was common in the town and neighbourhood of Stockton towards the close of the year 1815. It appeared to be contagious to a certain extent; but not to great extent under the circumstances in which the sick were ordinarily kept. The epidemic, which has prevailed in almost every part of the united kingdom since the latter end of the year 1816, has also visited Stockton; but with less severity than most other places, and with a very inferior degree of proportional mortality. It was epidemic and contagious; but not contagious in a high degree; and though frequently

tedious in its course, not often violent in its symptoms. It was occasionally communicated by 'contact, or by apparel that had been on or near the sick. It arose, sometimes, where communication with the infected could not be traced. Though arising in this manner, it acquired a contagious quality in the course of its progress, of which several instances occurred within my own observation.

The contagious fever seems to assume a more varied aspect among the common population of the country, whether gentlemen, labourers, or manufacturers, than it does among the military. The occurrence of the disease among the military is often the direct product of obvious artificial causes; the effect diversified, according to the greater or less concentration of the cause itself, and the higher or lower degree of the causes which are considered to be the immediate occasion of its appearances. I shall add a few cases in this place, as in some degree illustrative of its history,

CASE I.

Stockton, January, 1816. M. K——, a young woman, about twenty years of age, was seized on Sunday evening with head-ache, coldness, shivering, and other symptoms which mark the commencement of the fever which was then epidemic in the place. The sensation of cold was strong, and of comparative long duration. An emetic was given immediately; it did not operate as was expected.—Monday. Calomel and James's powder in large doses, often repeated,

viz. five grains of each every five hours: a blister was moreover applied to the nape of the neck. The tongue is rough, foul, and dry; the teeth and lips dry; the skin dry and harsh—somewhat erysipelatous.—Tuesday. No sensible effect from the calomel and James's powder, though twenty grains of each have been administered. Aq. Ammon. Aect. in large doses, often repeated: perspiration ensued.—Wednesday. Perspiration: the pulse frequent, not expansive; the tongue foul; the teeth foul and dry.—Thursday. Dreamed—somewhat delirious in the night.—Friday. The pulse more expanded, and less frequent; the skin soft; the body bound: purgative.—Saturday. Copious evacuations by stool; the tongue and lips still dry; the skin soft.—Sunday. Signs of crisis distinct.—M. K—— continued to improve: she rose from bed, walked about, even walked out for recreation; the sleep was good, the appetite nearly natural.—Thursday. No desire for breakfast.—Friday. Walked about—easily fatigued.—Saturday. Not well—no appetite for food.—Sunday. Restless in the night; head-ache; fever considerable; an emetic prescribed: it operated twice;—bilious matter ejected; some relief; teeth and lips dry.—Monday and Tuesday. Bowels open, even to purging; nights restless.—Wednesday. Delirious in the night.—Thursday. Incoherent—not outrageously delirious; knows her immediate friends. The eye is clear; the countenance clear; the tongue dry and blackish; the skin, on the breast particularly, of an erysipelatous blush; the heat moderate; vomits every thing she takes—the matter ejected, ropy, chocolate-coloured phlegm. Warm fomentations applied to the legs and thighs; bladders, with hot water, to the stomach.—Saturday. The vomiting ceased, in consequence of fomentation, which was continued for a long time; sleeps at intervals, rambles in her sleep, and talks incoherently when awake.—Monday. More sensible; the fever still continues; the tongue is dry and black; the throat is ulcerated; purging is considerable; the skin still harsh—and reddish, as if under scarlatine or erysipelatous action; the pulse is fre-

quent and small—without force of expansion: the eye is clear and pearly; there is considerable deafness.—This patient recovered slowly: several changes, like imperfect crisis and recurrences were observed at intervals: it was upwards of two months before she could be said to be free of disease.

CASE II.

Mrs. C——, a woman a few miles in the country, about the age of fifty, was attacked, in the beginning of November, 1816, with symptoms of a fever with which some persons in the house were then ill; and in which the gastric symptoms predominated. An abatement was said to have taken place at the end of the first week. About the middle of the second, she came under my notice. The aspect was then such as indicated the presence of fever of a contagious character. The skin was dry and harsh—of an obscure erysipelatous blush; the heat was scarcely increased beyond the natural heat; the pulse was open, free, and rather full; not frequent—scarcely, indeed, of a febrile frequency; the eye was clear, or rather glistened. There was no pain in the head; there was anxiety, restlessness, and anguish at stomach, but no tension of the hypochondria. The tongue was of a scarlet red—rough and dry; there was nausea and occasional vomiting; the bowels were irregular—costive or purged: the main action of the disease was manifested on the gastric system. An imperfect crisis took place at the end of the second week. The symptoms recurred again at a short interval, again abated, and again recurred; and, thus abating and recurring at intervals, the crisis could not be said to be final before the termination of the sixth week.

CASE III.

Mrs. B——, a woman, aged forty, was attacked with symptoms of the epidemic fever, which then (October, 1818,) pre-

vailed in the village where she lived. The fever began in the usual manner, with listlessness, head-ache, chills, and flushings of heat. It continued about seven days, without attracting more than common notice. At the beginning of the second week, the symptoms assumed a high tone of intensity, viz. severe head-ache, nausea, great thirst, the tongue rough, red and dry; purging troublesome—the evacuations watery, dirty, and ineffective; the hypochondria inflated; the skin dry and harsh—somewhat erysipelatous; the eye clear, the white pearly, the expression peculiar; delirium high at times—not absent at any time; the pulse open and free, not frequent as a febrile pulse; the force of the symptoms most conspicuous on the gastric system. The disease terminated favourably at the end of the third week.

CASE IV.

November 12, 1818. A girl, about twelve years of age, had been observed to droop for eight days or more; dull and stupid during the day, obscurely delirious during the night. To-day, she complained of head-ache, muzziness and confusion, a sense of coldness, at least a desire to be near the fire, listlessness, and even inability at times to support herself erect. The skin was hot at times; at times the increase of heat was scarcely perceptible; the surface was dry and harsh—unpleasant to the touch; the eye was glassy; the expression of the eye and countenance indicative of the presence of contagious fever, the epidemic then prevailing. An emetic was given immediately; it operated rather severely: it was followed by a purgative, which also operated briskly; a blister was applied to the nape of the neck.—13. The head-ache removed; the tongue foul, not dry, or not dry at all times; the skin not hot as the skin of a person in fever—not soft, or unpleasant to the touch.—Evening. The face flushed; the skin hot—not burning; no perspiration; no sleep; no pain any where; the tongue foul and white.—14. No sleep until towards morning; no perspira-

tion; the skin dry and harsh—unpleasant to the touch. Camphire, nitre, emetic tartar, and opium, with warm fomentations to the feet and legs, produced no perspiration: the tongue is foul, not dry; the eye glistens, the countenance is sometimes flushed, sometimes pale; giddiness with confusion in the head; the ideas not altogether coherent; the pulse frequent—upwards of one hundred and twenty strokes in the minute.—15. Slept in the night—perspired—wandered at times; tongue moist and red; not like the tongue at crisis: pain and uneasiness about the throat; skin softer; pulse slower; heat moderate.—Evening. Tongue dry, covered with a thin pellicle of a dark brown colour; the skin dry, not hot; no pain except at the throat; respiration rather hurried.—16. Wandered in the night; complains of the throat; respiration more calm: the pulse low—less frequent; heat natural; feebleness or want of power; tongue clean—not of a natural appearance; thirst moderate. Calomel, James's powder, and opium; camphire mixture, with spirit of mindererus occasionally.—Evening. Wanders a good deal; sleeps or dozes; skin soft; pulse frequent—above one hundred and twenty in the minute—small—regular; heat equally diffused, rather above natural. Wine in sufficient quantity.—17. Copious evacuations by the bowels; drinks with avidity; skin not hot, rather dry; pulse frequent—not full.—Evening. Pulse more open and less frequent; eye and countenance more animated; two evacuations by stool, watery and of a dirty colour—not feculent; skin dry. 18. Several liquid stools; tongue dry; teeth dry; complains more; wanders less; pulse frequent and small; want of muscular power—totally helpless.—Evening. Several liquid stools during the day. Dover's powder, with charcoal, and a few grains of rhubarb.—19. Rested well; breathing easy; heat natural; skin dry; tongue dry and blackish; eye clear; sensible; complains generally of being ill; pulse more energetic—less frequent; no crisis; no purging.—Evening. The pulse more expanded; the heat on the surface increased; no moisture on the skin; the tongue less

dry; not much thirst.—20. Slept well; eye clear; tongue less dry; pulse frequent and small; heat at the natural standard, equally diffused; pain in the small of the back; lies on the side; makes water freely.—Evening. Loose stools during the day; pulse rather more expanded; complains of the back and throat.—21. No material alteration; the eye more animated; the temperature of the body equal and moderate.—22. Rambled much during the night; the pulse frequent and small; the eye clear; the countenance placid; the tongue moist and clean; some desire for food; sleeps, or seems to sleep; lies on the side.—23. Rambled much in the night; the pulse frequent and small; the skin cool; the tongue clean and moist; the body open; no thirst; some desire for food; no perspiration; deafness considerable.—24. Good sleep; considerable deafness; complains of the throat.—25. Slept all night; eye and countenance more animated; heat natural; skin softer—not moist; some desire for food.—26. Slept well during the night; eye and countenance brighter; tongue moist and clean; skin dry; pulse frequent.—27. Delirious in the night; the mind carried, or alienated; the tongue clean and moist; pulse very frequent.—28. The mind much carried; the tongue red and moist; considerable salivation; uneasiness about the throat; deafness diminishes.—29. Complains much, particularly in the tract of the colon; no tension; a loose stool; less desire for food than for some days past; the eye and countenance clear; the pulse small and frequent; heat natural; no perspiration.—30. Upon the whole improving; the pulse frequent and small; the skin dry; no power in the lower limbs; some desire for food.—December 1. Improves; no decided crisis.—2. Slept well; takes food; sweated a little in the night; tongue clean; eye clear.—3. Improves; good appetite. This patient continued to improve; and, after the 13th of the month, recovered rapidly.

CASE V.

November 29, 1818. A boy, aged eight or nine, had been drooping for some time—two weeks or more. He has at this time evident marks of the epidemic fever which prevails in the country; the tongue is dry and red; there is much thirst; considerable cough, and more or less of wandering delirium.—30. Less uneasy in the night than for some nights past; the pulse frequent; the skin dry; refuses to speak; lies with his eyes and mouth shut; the heat is moderate—scarcely above natural.—December 1. Wandered in the night; some evacuations by stool; skin dry, and, as it were, shrunk; eye clear; breathing easy; teasing dry cough.—2. Wanders at night; sensible during the day; perception dull; puts out his tongue when desired; forgets to draw it in after it has been looked at; eye clear; pulse frequent; skin dry; body open—rather purged.—3. Three evacuations by stools; tongue clean, red, and dry; skin dry; pulse frequent and small—regular.—4. Much the same; the countenance pale; the body extremely emaciated; four stools in twenty-four hours—thin and watery.—5. Much the same; takes milk, and barley-water for drink; the tongue whitish; four stools in twenty-four hours—greenish; skin dry; pulse regular, but small; eye clear; fretful in temper.—6—7. Much the same; the progress rather forward, but at the slowest possible rate.—8. Complains of pain in the right side; five dark-coloured stools; the skin dry and shrunk.—9. Has taken milk with a little bread for breakfast; countenance rather more animated; no marks of crisis; a tendency to recovery perceivable.—10. Pulse less frequent; skin still dry; tongue clean; more appetite for food; stools of a better appearance.—11. A phlegmon makes its appearance on the rump; another on the loins—black at the centre.—15. The sores on the back and loins discharge matter. He speaks more; his ideas incoherent. He recovered by degrees from a state of emaciation, as extreme as almost ever occurs,

CASE VI.

November 25, 1818. A girl, between seven and eight years of age, had been ill for about three weeks of fever, as it was thought, in a mild form. During this period, the symptoms had assumed different forms, viz, delirious wanderings, vomitings and purgings, or dry and teasing cough. On the 25th, she came under my notice. There had been bleeding at the nose, which was full or swelled; the pulse was frequent, but distinct; she talked incoherently at times; sweated frequently—the sweat viscid and clammy.—26. Slept during the night; talks incoherently; the tongue moist; the cough teasing; the respiration free.—28. Very bad night; cough teasing; the countenance pale and sunk; the tongue not clean; the pulse moderate; the skin soft—often clammy; dewy sweat; the eye dull; lies upon the back; the eye half shut; somewhat deaf; talks oddly at times.—29. Slept pretty well during the night; cough less troublesome; eye clear; picks the nose, which bleeds occasionally; pulse regular—frequent; bowels costive.—30. Perspires a great deal; dozes, as if asleep; made water in bed.—December 1: Perspires; passes urine and stools in bed; respiration easy; stiffness about the neck; the pulse frequent—regular, not strong; several depositions of matter under the skin—sudden depositions without preceding signs of inflammation.—2. The abscesses opened—relief; the eye more lively; perspires; knows her father and mother; gives no notice of what is to happen to her.—3. Two grains of calomel; black-coloured stool; more animated; moves her hand, &c.—4. Pulse more distinct; skin dry—not hot; respiration easy; tongue aphthous; not insensible when roused; lies apparently in stupor.—5. Much the same.—6. No material alteration; skin moist; pulse regular; respiration easy; no tension in the abdomen; does not speak, or give notice of her evacuations, though sensible of what happens; deaf.—7. Eye and countenance less animated; the eye half open;

swallows porter with eagerness.—3. More lively in aspect; two stools in bed; sensible of the effect; does not give notice; respiration easy.—9. More animation; took some milk and bread; utters a few words; much perspiration—somewhat viscous.—10. Eye and countenance improved; looks up when spoken to; sensible, but does not give notice of urine or stool; took tea with bread.—11. Damp viscous sweat; sleeps on her back; the eye half open; the pupil very much dilated.—13. Coughs much; talks at random; the eye clear; a deposition of matter at the lower edge of the shoulder-blade.—14. The swelling opened; the matter uniform; appetite improves. This girl recovered gradually, giving an idea in the progress of recovery, of the power of life gradually emerging from oppression.

CASE VII.

December 14, 1813. D——n, aged between twenty and thirty, a stout labouring man, who lived in the same house with the girl, whose case has just now been stated, was seized, on the evening of the 12th, with head-ache, chilliness, pain in the back, and other symptoms usual at the commencement of the prevailing epidemic. The indisposition continued on the 13th. On the evening of the 14th, he was brought under my notice. The pain of the head was then severe, particularly at the crown; the tongue was foul and dry; thirst was urgent; the skin hot; the pulse frequent—strong and regular. Bled to the amount of eighteen ounces; the head-ache relieved: an emetic: after the operation of the emetic, calomel, jalap, and emetic tartar; blister to the nape of the neck.—15. The purgative operated powerfully; the head was relieved; the tongue was still foul, with thirst; and the skin was still dry. Camphorated mixture, with Aq. Ammon. Acet. and nitre: the feet bathed in a tub of warm water, there being no other bathing vessel at command. The pulse febrile, regular, not weak: the blood firm, not cupped; the serum milky.—16. Did not sleep; sweated in

the night ; griping pain in the bowels, constant ; no head-ache ; the tongue rough and white ; the heat natural ; the skin dry ; the pulse free and open—not frequent, scarcely febrile. Castor oil.—Evening. Four stools, the pain in the bowels relieved ; the pulse regular ; the tongue rough—not clean. Calomel gr. iv. pulv. ipecacuanhæ composit. xviii.—17. Slept and sweated ; no pain ; little or no thirst ; no desire for food ; the tongue still rough ; the pulse scarcely febrile ; the skin soft and warm—not hot : no decided crisis ; the febrile course apparently suspended.—Evening. Head-ache ; pain in the bowels, with tension. Castor oil.—18. Several stools ; slept at intervals ; sweated during the night ; the pulse regular and calm ; the skin moist and pleasant to the touch ; the tongue still rough ; no desire for food ; no thirst.—19. Did not sleep well ; no complaint of pain or uneasiness ; the skin soft and moist ; perspiration moderate ; the pulse not febrile ; the tongue whitish and rough ; no desire for food.—20. Perspiration copious in the night ; little sleep ; no desire for food.—24. The tongue clean ; the desire for food returned ; no remains of indisposition.

REMARKS

On the prevailing Epidemic.

Contagious fever, as it appears in fleets and armies, is almost always, if not always, an artificial disease ; viz. the product of the accumulation of many persons under canvas in the field ; in the narrow 'tween decks of transport ships, or in damp and ill-ventilated barracks. It has often a similar origin among masses of manufacturers, shut up in ill-ventilated work-houses, or lodged in damp and ill-ventilated cellars, as places of dwelling. The disease, as originating from a common cause, is analogous in general

form ; it is modified, more or less in appearance, by circumstances of place and subject. A condition of atmosphere, artificially produced by aggregation and want of due ventilation, acts adversely on human health. It occasions a disease, which, in the course of its proceeding, generates a material which is communicable to others, and which, thus communicated, propagates its kind through a series ; in other words, becomes contagious. This is intelligible ; at least, the state of the fact is visible. The history is obscure, and considerably perplexed in other conditions, viz. where the disease appears suddenly, and extends rapidly and widely over an extensive kingdom. The rise, at least the progress cannot in such case be supposed to depend on a state of atmosphere locally corrupted by artificial aggregation, it must of necessity be supposed to depend on something adventitious connected with the constitution of the atmosphere generally diffused in it ; and, thus diffused and predominant, distinguished by the name of epidemic. This epidemic or adventitious influence is stronger, as judged by effect, at certain points on the surface of the earth, or in certain tracts of country than in others ; but, though the force be visibly augmented or diminished by circumstances, it is not possible to say in what its essence consists. Different portions of the annual revolution, as marked by different conditions in the state of the atmos-

phere, are, for the most part, distinguished by peculiarities in the form and feature of the diseases which attach to the human race. This is common and regular; and, as connected with the operation of visible causes, is supposed to be comprehensible, in so far as human powers are capable of comprehending the causes of things. But, besides what is now stated, certain new and unexplicable effects arise occasionally, after the lapse of several annual revolutions, so irregular indeed in time and mode, as not to be calculable, but so impressively marked in their steps, as to command attention, and often so formidable in their consequences as to excite alarm, on account of personal safety. The duration of epidemic influences is uncertain, sometimes six weeks; sometimes three months; sometimes six; and sometimes for a series of years, with occasional risings and fallings, or cessations and recurrences, within the extreme limit. During their prevalence, diseases usually present themselves with peculiarities in character, and spread or propagate with a facility unknown at other times. It is moreover remarkable that these facilities which are prompt for one form of disease, are obscure or lost for another; insomuch that propagation is difficult, even under the application of a distinct cause of infection. This is often verified, and the existence of the fact affords the only explanation that can be given of the sudden rise,

the rapid propagation, and the sudden or gradual decline of the epidemic, while subjects are numerous, and the cause apparently in existence in the circle where they lived.

The fever which has been so general in Great Britain and Ireland, for these last two or three years, is decidedly contagious; that is, it is capable, in a certain state of existence, of furnishing to the immediate atmosphere of the sick, or to materials that have been in contact with the sick, a something which propagates its kind through a series of susceptible subjects. It has, notwithstanding arisen in so many instances without actual communication, and without the possibility of discovering the channels of communication, by which it could be supposed to pass, that it is impossible to refuse assent to the opinion that a disease, which possesses this property, may actually arise from a secret quality in the constitution of the atmosphere, that must ever remain unknown, as not visible or measurable. Febrile diseases have many forms, and almost an infinity of shades of form. They are sometimes epidemic without being contagious, or susceptible of contagion; sometimes they are epidemic; and, though not originally, are readily convertible to contagious action; or rather with difficulty prevented from assuming it. Of these, the gastric form of fever is the most prominent; and it is the form which most prevails in Great

Britain. The cause, which produces this form of disease, would appear to have predominated in the constitution of the atmosphere of the united kingdom for the last two or three years; and as gastric fever, when it does occur, is, as already observed, prevented with difficulty from assuming a mode of action which generates a material, which, diffused in the air, corrupts its purity, and moreover acts subversively of the health of those who come within its sphere, the epidemic has spread wide, and continued long, whether produced by an unknown atmospheric condition, or propagated direct by personal contagion.

Though the gastric origin of the contagious epidemic which I have assumed in this place, may not be the true one, the idea notwithstanding suggested itself in a course of clinical observation. The symptoms of the disease in so far as they came under my notice, were generally gastric, especially at the earlier periods; that is the febrile act was principally manifested on serous secretions, or exhaling surfaces within the abdominal cavity; on the peritoneal surfaces, the interior of the alimentary canal, and by continuity on the exhaling surface of the exterior skin. The function of the alimentary canal was almost always disturbed in one way or other; the expulsive power diminished in some with irksome sensations of desire; increased, at least irritated to exertion

in others without effective purposes; the evacuations were changed in their nature, viz. dark, fetid, often watery, dirty, copious, and of a sickly offensive smell, not feculent. Nausea and vomiting occurred occasionally; they were not often urgent: the stomach was sometimes inflated, the infection accompanied with sensations of anxiety and distress; sometimes there was distress at stomach, without actual pain or distension. The urinary discharge was sometimes copious, pale or brown, what is termed crude; sometimes it was scanty, high coloured and fetid. The condition of thirst was variable; sometimes considerable, sometimes not much increased, not satisfactorily removed by drinking; cold water was craved and swallowed greedily in large draughts by many. The taste was often vitiated, mawkish and unpleasant, sometimes bitter; there was not desire for food; sometime there was marked aversion from it. The tongue was sometimes preternaturally red, rough and disposed to be dry, in the earlier stages; sometimes red, glossy, smooth and shining as if it had been varnished in the more advanced. It was sometimes tumid or swollen, white and mealy, moist or covered with ropy saliva; it was sometimes diminished in size, rough and pale with insatiable thirst. It was often, particularly at late periods, covered with a dark coloured scurf or pellicle, sometimes moist, oftener dry. In many cases, the

superficial appearance did not indicate such change from the natural state as can be committed to description. The hypochondria were generally full, sometimes tense and impatient of the touch. The abdomen was sometimes tympanitic, the tympany sometimes conjoined with watery purging, and more or less of delirium—a suspicious combination. The skin had not unfrequently an erysipelatous or scarlatine blush, harsh and unpleasant to the touch; sometimes it was arid and shrunk; sometimes damp, flaccid, and greasy—the impression peculiar and disagreeable. The appearance and expression of the eye and countenance were more or less striking. The expression of the eye was sometimes sullen and stern, sometimes wild and threatening. This happened in the early stage. It was connected with delirium, or threatenings of delirium; but it was not a case of common occurrence. The eye was, for the most part, bright and clear, sometimes brilliant or glistening: it was sometimes clear, but vacant of expression, sometimes livid and dull. The countenance was sometimes animated by a circumscribed flushing on the cheek; it was often pale, without animation. The heat of the skin was seldom much increased; it was not higher than natural in many; it was lower in some: it was never ardent and strong; it had less causticity in impression than is often observed in diseases of the contagious character.

The pulse was various, sometimes slow and drawling, without energy in the mode of contracting ; sometimes it was open and expanded, rarely quick and energetic ; it was often frequent and small—not often irregular. Respiration was generally calm and free ; a teasing irritating cough was, notwithstanding, distressing to some, indeed to many : apparently connected with irritation about the larynx, and often removed by the application of a blister to the throat. Pain of the head was excessive in some instances—severe, rending and agonizing ; in most there were sensations of heaviness, confusion and irksomeness rather than what is expressly called pain. Delirium occurred sometimes, but not often at an early stage, it was then violent and threatened convulsion. Delirium, or mental alienation was common at advanced periods. It was sometimes lively and animated—a constant, or occasional reverie ; sometimes a low muttering and incoherence, as not interrupted, capable of being excited to consistence by appropriate stimulation. In some cases, there was stupor or impaired sensibility ; a dozing or appearance of sleep ; impaired speech ; a dilated pupil ; marks of idiotcy. The occurrence of deafness was common towards the height of the disease. The cause which occasioned it was sometimes removed in an instant ; the removal succeeded by a recurrence or accession of fever—often in a dan-

gerous form. Ptyalism, as from mercury, occurred not unfrequently towards the decline. Pains in the feet and legs marked the termination of the febrile course in several; also abscess, deposition, or boil, in different parts of the body; in some, gangrenous abscess on places that had sustained pressure.

The duration of this form of disease, as left to its own course, or feebly treated, was seldom under three weeks, sometimes six, and even nine. It was generally cut short, the patient restored to health in seven or eight days, where it was submitted to treatment at an early period, and treated with decision, on a sound principle, when submitted. The total duration of the disease was long; but it did not proceed through its long course according to one tenor. The character of the symptoms changed repeatedly within the total limit, generally at septenary periods; it often changed so completely, that the form, which succeeded, had little resemblance in superficial appearance to that which preceded. In one case, for instance, the more prominent gastric symptoms were superseded by symptoms which claimed the sentient system for their base, whether intellectual or locomotive; in another, the action of the disease was transferred to the thoracic organs; and in many to the coats of the intestinal canal. Expansion and extension of the sphere of circulation commenced at a certain

point of progress in some. It proceeded on-wards, induced perspiration, and effected crisis. Marks of retrocession, threatening congestion of blood in the great veins and spongy organs of the interior, became visible in others, at a given point of progress: if not arrested, death was the consequence; if arrested, and induced to assume a forward course, recovery was effected.

The mortality of this disease, in so far as has fallen under my own immediate observation, was small, comparatively, even as left to itself, or scarcely interrupted by treatment. The course was, notwithstanding, tedious; the symptoms frequently such as gave considerable apprehensions on the score of safety. Careful nursing, and pure air, which were generally under command, gave to almost the whole a favourable issue. Two persons died; one advanced in years, the other of a full habit, both of them in the upper ranks of life; and, like many others of that class, little under the controul of the medical advisers.

CHAPTER IV.

History of the Symptoms of the Fever which generates a contagious Material in the course of its action, and which propagates itself by what is thus produced, through a series of healthy Subjects; in other words, the History of the Fever which arises in Jails, damp Cellars, Transport Ships, Military Barracks, Hospitals, and other crowded and ill-ventilated Places.

THE fever which arises from the impressions of contagious matter, whether proceeding directly from the bodies of men in a state of disease, or from substances that have been in contact with the subjects of disease, has, on many occasions, a period of indisposition precursory of the formal attack. The indisposition varies in form and degree according to the circumstances of the subject and the conditions of the cause to which the subject is exposed. Slight and irregular chillinesses, sensibility to cool air, or a desire to be near the fire, are noticed as precursory on many occasions; a desire to

be in the open air, even a desire to be in the open air under rain, is observed in others.—There is ordinarily more or less of pain in the head, sometimes continual and dull, sometimes sharp and changeable—principally at the forehead and temples. The eye is sometimes bright and glistening; sometimes white, dull, and listless. The countenance is sometimes bright, flushed as under the application of heat; sometimes pale, dull, and inanimate. The spirits are sometimes cheerful, exhilarated as from wine; the muscular vigour and alacrity not impaired; sometimes the spirits are depressed, the limbs weary and incapable of exertion. The tongue is often foul, especially among those who live in an infected atmosphere; viz. crowded barracks, crowded transport ships, or crowded hospitals. It is then dry, and together with dryness, there is an unpleasant taste in the mouth; increased thirst, eager desire of cold water; want of appetite, even sometimes abhorrence of solid food. The stomach is frequently too full—distended with flatulence, as from want of power of compression. Nausea is not unusual; retching, and actual vomiting occur sometimes. The function of the alimentary canal is more or less disordered; the bowels sometimes constipated; sometimes loose, with irksome sensation and frequent desire of the night chair; the evacuation seldom copious and effective. Respiration is often disturbed—hur-

ried under exercise ; and in many cases, there is a continual sense of stricture at the chest. Sleep is rarely sound ; it is interrupted by dreaming, reverie, and delirious wanderings.—Giddiness of the head occurs frequently, even tottering and reeling in walking, as under intoxication. The urinary secretion is variable ; the urine often pale and copious ; sometimes red and scanty. An indisposition of the kind now described sometimes precedes the formal attack of fever, by three, four, five, seven days, or more ; sometimes it ceases, and no fever succeeds, whether prevented by accident or the effort of art ; sometimes it continues for months, especially among those who officiate within the walls of infected hospitals, or other unwholesome places.

The disease, which is the subject of the present inquiry, may be considered as altogether artificial ; inasmuch as it arises from a source of direct contagion, generated artificially among persons who are placed under circumstances of restraint. When generated and concentrated to a given point, it propagates its kind through the mechanism of animal organism ; and, thus propagated, it attaches itself to foreign substances, and is by these conveyed to distant places and different persons in a state of greater or less activity. The proper act of the contagious cause is necessarily supposed to move in one series of parts only ; the act more or less

intense in degree, and subject to variety of complication from contingency. The appearance of the disease is different, according as its cause is applied to subjects of different temperament, viz. sanguine, lymphous, or gangrenous; or, as it is applied to persons under peculiar circumstances of local predisposition. It is evident that a cause which generates its kind, and manifests that kind by an external product, cannot act otherwise than on an organ of excretion. The product is invisible; it must, therefore be supposed to be manufactured by and to proceed from the minutest series of secreting vessels, viz. those which give out invisible exhalation from the external skin, or lining of interior canals.

But though the generative act of contagious fever, considered as a generative process, moves on one series of parts only, and after one general mode of proceeding, yet as the animal body is a complicated machine, connected in all its parts, the whole of the system is more or less implicated in the process, which is necessary to the generation of the contagious material. In contagious, as in other forms of febrile disease, two modes of action, exclusive of local complications, are more or less prominent, viz. tide and progression to the exterior circle, regularly and uniformly, or irregularly and constrictively; or ebb and retrocession to the interior, that is, abatement of the usual vigour of progression,

disposition to stagnation ; and, from stagnation, tendency to dissolution, manifested sometimes gradually and slowly, sometimes violently and tumultuously. In the one case, the act terminates by what may be called explosion of gangrene on an internal or external part, in the other, by petechiæ, vibices, and hæmorrhage, or oozi-
ings of blood from different parts of the body.

The contagious fever of armies has presented itself to the writer of this sketch under a considerable variety of form and aspect. The opinion may not be correct, but he was disposed to believe that the varieties were principally produced by the following circumstances: viz. 1. relative force, or concentration of cause; 2. source of cause—viz. the living body, or contagious matter attached to and condensed on foreign substances; 3. manner of application of the cause; viz. single, or often repeated; 4. condition of subject at the time of application; 5. contingencies, occurring between the time of the application of the cause and the formal explosion of the morbid act; and 6. accidents and medical treatment, calculated to act upon the subject during the actual course of the disease.

1. Where the fever in question made its appearance among military who were quartered in crowded barracks; as the cause was what may be called primary, and as it was usually of moderate force, the course of the act produced

was generally progressive to the exterior, the symptoms generally mild, the vascular action regular and expansive, the termination sometimes on the third day, sometimes on the fifth, rarely extended beyond the seventh in one tenor; that is, without a change in circumstances implying something new in the form of the fever's character. Where the cause was concentrated in force, as in unwholesome and crowded hospitals, the course of the disease produced in consequence of its application, though such as upon the whole might be termed progressive, was progressive irregularly and constrictively; the skin was often sallow and dingy; or hot, dry, and harsh; the heat unequal; the aspect of countenance unpleasant—clouded, contracted, or downcast; the evolution of the febrile symptoms irregular. The course appeared to be impeded by the operation of an unknown cause of constraint; and, in such case, abatement, or suspension of the febrile course on the third, fifth, or seventh day, occurred more frequently than distinct and final termination.

2. Where the disease drew its origin from contact or near approach to the bodies of living men, it was often violent in degree, according to the relative degrees of concentration of the cause; it was less protracted, and ordinarily less regular in the series of subsequent changes than where it had originated from the contact of condensed contagious matter deposited upon

clothes or other substance. This appeared to be the fact, in so far as I was capable of observing; I am not certain that it is the fact in all cases.

3. Where fever followed a solitary instance of contact with the infected source, the symptoms were ordinarily more regular, the appearances less complicated, than where the contact had been frequently repeated. In correspondence with this observation, transient visitors appeared to experience a slighter disease, or a disease of a simpler form and less liable to relapse, than those whose visits at the source were daily, or many times a day; that is, than medical attendants, nurses, and other servants who officiated in the wards occupied by febrile sick.

4, and 5. The actual condition of the subject at the time the cause of disease was applied, as well as impressions which were made upon the habit between the time of application and the formal explosion of the disease, may be reasonably supposed to modify the subsequent appearance; it in fact, did so in no inconsiderable degree. The circumstances comprehended in this class of causes are numerous. Temperament, manner of life, influence of season and weather may be reckoned among the principal. In one, the chief force of the disease was directed to and exerted upon the gastric system; in another, upon the parts within the thoracic cavity; and in an other, upon the cerebral organs,

the intellectual functions, or instruments of locomotion.

6. Medical treatment and more casual contingencies, occurring during the febrile course, influenced very distinctly the mode of action which the disease assumed. It thus happened that, under one mode of treatment, the violence of the symptoms was moderated, the progress of the disease not unfrequently arrested; under another, the symptoms were aggravated, the salutary process was interrupted, the fatal termination actually precipitated; under a third, the course of the disease, as little disturbed by treatment, proceeded according to its own rule. It underwent changes in form and force of symptoms at different periods; the course was protracted; the crisis often obscure; the progress to recovery frequently slow; the mortality not high comparatively. This is the fact, as verified in a variety of histories.

Contagious fever is a disease of long duration as left to itself; it is even frequently of protracted course as submitted to the ordinary modes of medical treatment. The base, upon which the more striking of the symptoms move, is liable to change; it is, in fact, often changed repeatedly within the limit of the total duration; so as to exhibit appearances, which, at different times, are totally unlike to each other. The disease is ordinarily described under two degrees, viz. *mitior* and *gravior*. The degree

of force, as measured by expression of force in the actions of the vascular system, in different subjects constitutionally ; it even varies in the same subject at different times. It is important to the practical physician to observe and estimate relative degrees ; for, it is from the correctness or error in the estimate, that the means of remedy are applied with effect, or without benefit to different conditions. But, though the estimate from actual observation be important to the practitioner, the ground upon which the estimate is to be made, with the exception of the number of the pulses of the heart and arteries in a given time, and the measure of temperature, as marked on the scale of the thermometer, has no definitive basis as a line of comparison. The case must, therefore, be seen ; the estimate made by the eye and the touch ; it is not communicable to description in words. Besides the arbitrary and ill-defined distinction of *gravior* and *mitior*, the distinction of acute and subacute, as an act moving on the same series of parts, is equally ambiguous and unappreciable : as an act, produced upon parts of different structure, it is founded, and deserves attention. The term acute must be understood to imply that form of action which moves rapidly, and completes its circle, in the shortest given time. The act is suppurative, manifested generally by increased vascular action, sweat and hypostatic urine, locally, by purulence, by

explosions of gangrene, by adhesions, obstruction, and effusion, the excited act becoming quiescent after the primary process is completed. The subacute form moves at a comparatively slow rate, and completes its circle after a comparatively long lapse of time. As connected with fever, the act is principally manifested on the expansions of the mucous membrane.

The distinctions of *gravior* and *mitior*, acute and subacute, as base of historical description appear to be objectionable, as not expressive of precise limit. The distinction of simple and complicated ; that is, a distinction of the morbid act, as moving on one series of parts principally, or as extended to more than one is more intelligible. While precise, it is consonant with the law of nature ; it is therefore assumed with reason, as the base of the historical description that is given in the following pages, whether the course be progressive or retrogressive, general, or prominently local. The febrile act is liable to change from one series of parts to another at different periods within the total limit of the disease ; and, as the expression of the series, which succeeds, is not unfrequently different from that which had gone before, appearances are fluctuating, even contradictory of each other. The fact, which is striking, forces the conclusion, that the more ostensible part of the febrile act is contingent to the contagious process—not a part of it ; and, as these contingen-

cies change frequently, and as their effects are for the most part, the obvious causes of death, it is important to the physician to watch their course with care, and to anticipate, if possible, the occurrence of such as may be dangerous. The description which follows is only an outline of modes, connected arbitrarily and uncertainly with the existence of a contagious process within the habit; they are not the description of the process itself; that occupies a field of extreme subtilty, and, in its action produces an effect too minute for the discernment of the human eye. The contagious process continues in the habit for one month, sometimes for two or more; the contingent febrile act has, during this interval, a number of revolutions; that is, a series of diseased movements in different circles, which have their own periods and their own terminations.

SECTION I.

History of Symptoms in the open and simpler progressive Form of Fever, connected with Contagion.

A. The attack, of what is here described as the first of the progressive forms of fever connected with contagion, sometimes commences suddenly; sometimes the attack is preceded by more or less of febrile indisposition of several

days continuance. The formal invasion is usually marked by a sense of coldness, creeping, and shivering. The sense of cold is seldom strong; and tremor from cold, similar to what occurs in fevers of the intermittent class, even in some of the more concentrated, continued forms, from an endemic source, is not common.— Flushings of heat succeed, at short intervals to sensations of cold; they, in fact, often intermix from the first moments of attack. The sensations of heat, which ordinarily commence by transient flushings, and which are speedily diffused to the surface and extremities, soon prevail throughout. The degree of heat is rarely high, as measured by the thermometer; the sensation, instead of being continuous and ardent, is glowing and active, analogous with sensations in temporary flushing; it is sometimes evolved in successive streams in the manner of explosion. The marks of the febrile disturbance are more conspicuous on the head and superior part of the trunk than on others. The face glows and flushes at intervals, similar to the glowings and flushings that are felt from drinking freely of wine, or from entering suddenly into a heated apartment from the cold external air. The eyes are sometimes red and muddy, hot and painful; they are oftener clear comparatively, bright and glistening, like the eyes of persons in amorous dalliance. Pain of the head, common in one form or other in almost

all febrile diseases, is here usually severe; that is, acute, lancinating, chiefly at the forehead and temples: pains dart irregularly through the limbs, and strike off in different directions as by explosion. The tongue is often foul, white, moist, and slimy; sometimes it is rough and brown. Thirst is irregular; sometimes great; sometimes not greater than natural. The pulse various; it is sometimes frequent and quick, rarely hard and tense; it is sometimes buoyant, full and open, not oppressed, or struggling, as it were against oppression. The breath is usually hot, and sometimes offensive to the smell; respiration is sometimes hurried. Nausea is not unusual; vomiting occurs sometimes. The function of the alimentary canal is irregular, sometimes confined, sometimes loose, the evacuations small and ineffectual, watery, not feculent: the urinary secretion is variable; sometimes diminished, rarely increased.

The course of the fever, formed on this base, proceeds with risings and fallings, at different periods and different rates, but upon the whole progressively until the fifth, oftener until the seventh day, when the skin, which had continued warm and animated throughout, begins to relax, even sometimes to dissolve in fluid perspiration; the urine deposits a sediment; the alimentary canal resumes its function, and performs its office effectively, the

tongue becomes clean and moist ; the desire of food returns, signs which make the completion of a circle of febrile movement, become manifest, and are in fact often distinctly developed. The absence of the fever, thus attained, is of various duration ; sometimes of three days, or more ; sometimes only of a few hours. The symptoms recur ; and thus recurring, proceed on the same base ; sometimes with considerable excitement in the vascular system, more or less delirium, generally of the lively and cheerful kind, thirst, dry tongue, &c. About the fourteenth, more or less from the commencement, the seventh from the recurrence, the course terminates in crisis, or the mode changes to another form. The termination is sometimes final ; health is restored and sometimes established securely ; sometimes the change, or termination is succeeded at a short, or at a scarcely perceptible interval by another series of febrile symptoms, which moves on the same base, and which, not completing its circle before the termination of another septenary period, carries the disease, in total duration, beyond the twentieth day. The above description comprehends the outline history of the more simple and regular of the forms of fever, connected with contagion ; in so far as the act maintains the progressive and simple form of character. That does not, however, very often happen, especially where many sick persons

are crowded together in ill ventilated hospitals. The base of the action, and the mode of the action are changed repeatedly in most cases during the total duration of the disease; viz. from progressive to retrograde, and from simple to complicated, &c. The simpler progressive form of fever is more commonly manifested among those persons who have been exposed to the impressions of the cause in a state of little comparative concentration; who have lived in pure air in the interval between the time of exposure to the cause, and the formal explosion of the act; and who have moreover, when the disease has commenced, been received into warm and well ventilated apartments; or who have been occasionally submitted to the impulses of a pure atmosphere, in the act of transport from quarters to hospital.

SECTION II.

History of progressive forms of Fever connected with Contagion, as complicated and irregular in mode and degree.

B. There is a form of fever connected with contagion, in which, though the general tendency of the act be progressive, yet its progress is often impeded by the operation of known or unknown causes, producing constrictions, irregular determinations to particu-

lar parts; consequently which produce much commotion in the system, and eventually much danger to life. This form of disease occurs occasionally where the cause is of a major degree of force, where it is irregularly applied; or where the habit is unduly susceptible, or the energies of life locally depressed by particular exposures. The febrile act is ballanced irregularly in the different parts of the system in the case under view. The expression of the act is sometimes obscure, sometimes it is exerted tumultuously. The secretions and excretions are irregular, defective in one part, in excess and of changed quality in another. The formal attack is sometimes preceded by an indisposition of a few days; it oftener invades suddenly from a state of apparent good health. The sensation of cold, which marks the invasion of most fevers, is here characterized by a want of warmth and life in the surface, rather than by a sense of horror and shivering as is usual in the more open forms. Dullness of mental perception, dimness of sight, swimming and giddiness of the head, pains, confusion and a sense of oppression are common; even fits-convulsive or epileptic, occur at the commencement on several occasions. Pains in the back and limbs are usually severe, sometimes distressing, deep seated, distinguished by a sense of tearing, as if a dog were gnawing at the bone. The countenance

is frequently sallow, pale and dull, sometimes suffused and agitated. The eye is sometimes languid and vacant, inanimate and glassy, or glistening without expression; sometimes it is wild and furious. The skin is sometimes damp and dirty, as if it had been washed with greasy water, and imperfectly dried; sometimes it is dry, dense and constricted; sometimes clay coloured and withered, like a leaf that falls from a tree in autumn: its condition is always changed more or less from what is natural. The heat, as measured by the thermometer, or estimated by the touch, is rarely high at the extreme surface or the extremities hands and feet, sometimes not higher than natural; it is unequal at different parts, usually pungent, disagreeable and of a caustic impression on the trunk of the body, particularly at the præcordia. The act of respiration is disturbed, generally short and high. The pulse varies extremely; it is sometimes small, feeble, irregular, sometimes frequent, quick, unequal, giving the impression of irritation from a cause of resistance; sometimes it is equal but constricted as it were, and repressed; sometimes it is a little more frequent than natural, sluggish, even slow and unenergetic.

Where fever presents itself under complicated form, the symptoms, which are mostly contingencies independent of the process generative of contagion, are often so varying and

fluctuating in their course, that it is not easy to analyse the history correctly; that is, to ascertain the base upon which the febrile act principally moves. The tongue is sometimes preternaturally red and moist withal, sometimes it is red, moist and rough, the roughness adhering closely to its surface; sometimes it is white and foul, covered with a coating of cream coloured mucus, irregularly moist or dry; sometimes the covering is milk white, a meal like substance spread over the surface uniformly or in patches. Thirst, loss of appetite, disagreeable taste in the mouth, and nausea are ordinary symptoms; actual vomiting occurs sometimes. The stomach seems frequently as if it were over full, distended with flatulence, the hypochondria more or less inflated, the inflation sometimes accompanied with sensations of irksomeness, anxiety, even distressing anguish. Respiration is sometimes high and laborious, attended with cough and other feelings as if the form of the disease were actually pneumonic; sometimes while the respiration is little disturbed, a dry teasing, irritating cough comes in fits, so as to be extremely distressing. The alimentary canal manifests, for the most part, a large share of the suffering: the bowels are sometimes bound, even constipated; sometimes they are open, or rather loose, the evacuations watery, unnatural, small and ineffectual. The state of the skin is always more or less

changed from its natural condition, changed in such manner, in most cases, as to furnish a diagnostic of the disease. It is sometimes dry, harsh, thick and full: the impression which it makes on the hand, imparts an idea of constriction and density: sometimes it is damp, greasy, dirty and flaccid; the impression, while disagreeable to the hand which touches it, is indicative of a change of condition in its natural function, sometimes it is dry and harsh, of an erysipelatous blush; sometimes tender of the touch, that is, impatient of pressure, as if it had been bruised. The animal heat is distributed unequally on the surface, ardent and glowing on one part, deficient, or not increased on others. The aspect of countenance is for the most part obviously changed from its natural expression, viz. grim and agitated, or desponding and shrunk. The general sensations of the patient are often irksome, the condition unhappy: pain in the head is perhaps oftener of a dull and oppressive kind than acute; sometimes it is rending and distressing: pains in the joints, and at the small of the back, are usually deep seated, analogous to the sensations of pain in the cold stage of intermittent fevers of malignant character. The intellectual organ is variously affected. Delirium is irregular, sometimes violent, and at intervals, alternating with affection of the chest; sometimes more continual, accompanied with tremors and

tendency to spasm or convulsion. The vascular system presents considerable variety in the form of its action at the commencement, and during the progressive course, viz. executed irregularly; now strong, now weak, or such as, with propriety, may be termed quiescent by force, indicative of the presence of a cause of irritation, the open effect of the irritation repressed by the presence of a cause of constraint or constriction.

The form of fever, now under consideration, has risings and fallings in the intensity of its symptoms at times through the whole of its course; and, at certain periods, viz. the third, fifth or seventh day from the date of the formal attack, the action of the vascular system rises to full excitement, the skin relaxes, the suspended secretions and excretions are restored, and health is apparently re-established. The re-establishment is sometimes permanent: it is oftener temporary and imperfect. In the latter case, a new series of febrile movement arises at a longer or shorter interval. It proceeds in a customary febrile course to a given termination, whether favourable or fatal, the duration of the course being of the same extent, for the most part, as that of the preceding. Instead of favourable termination on the third, fifth or seventh day, death sometimes takes place before that period, particularly in crowded and ill ventilated hospitals: it some-

times does so by convulsion, after manifestation of strong cerebral irritation; sometimes by more silent coma, or other from a stagnated circulation in one or other of the more important internal organs. Life seems also to be saved on some occasions, from this complicated form of disease by the occurrence of hæmorrhage, nasal or intestinal; even sometimes by the explosion of gangrene upon an external part.

The disease, as now stated, terminates by crisis on a critical day, most frequently on the seventh; or the febrile course being then suspended only temporarily, a movement takes place on a new base, and runs over a course of similar duration with its predecessor. The second circle of febrile movement is, upon the whole, more dangerous to life than the first; but for the most part, less complicated in manner. It moves on one base progressively to the exterior circle, and to health; or on one base, regressively to the interior and to death. The action of the vascular system is gradually developed in the first of these conditions. The circulating power expands in the surface and extremities; the skin becomes warm and animated; the tongue, which had become moist and clean at the period of change, becomes dry and foul, and assumes a brownish coat, which grows in thickness as the disease advances in progress, loosens and separates at the period of crisis.

The cerebral function seems to partake of the expanding power manifested in the movements of the vascular system. The ideas wander; the imagination is lively, sometimes extravagant; a condition which continues, with risings and fallings at different periods, not only during the continuance of the fever, but even sometimes for weeks after all the common marks of fever have ceased. In the second, viz. retrocession to the interior, the appearances are more complicated than those now stated; inasmuch as direct oppression, or tumultuous commotion, arising in consequence of preternatural accumulations accidentally produced, effect a change in the regular aspect of things, of such a nature as to precipitate the fatal event contrary to the ordinary rule of calculation. The pulse, instead of expanding and developing in the extremities with energy and force as in the preceding case, here contracts, and as it were, wraps itself up, becomes small comparatively, frequent, sometimes hard and wiry, sometimes feeble and soft without power of resisting pressure, sometimes scarcely perceptible at the wrist from weakness, and sometimes not to be distinctly counted from frequency. The approach to stagnation and death is sometimes gradual and silent; sometimes the event is precipitated by a supervening convulsion. The state of the skin is in contrast with what is observed in the preceding. It is dry and cool, sometimes cold, particularly at

the extremities; it is sometimes marbled, especially about the joints; and sometimes petechiæ crowd the surface, numerous on the arms and breast. The mind is usually more or less engaged; delirium is rarely violent: it amounts, for the most part, only to incoherence, muttering, stupor, insensibility, or loss of consciousness. The appearances vary according as parts, which are instruments of different organic functions, are more or less pressed by the retiring current of the circulating mass. Among the various local forms, the gastric is perhaps the most common. The tongue is red, dry, glossy and shining; sometimes it is covered with a black skin or pellicle, which extends to the teeth, the gums, and lips; sometimes accompanied with inflation, or tympanitic distension of the hypochondria and abdomen; sometimes with contraction or collapses; in either case, with purging of watery offensive stools. From this state of retrograde, a counter movement arises on some occasions, whether produced through means of art, or arising spontaneously from innate power in the constitution, in consequence of an unascertained mode of release from the pressure of disease. When thus produced, it tends gradually to the exterior; but the point, from which the emerging tendency begins, is frequently so obscure, that it is not easy to fix on it with certainty; the progress becomes visible more and more every day, and

tends, by slow degrees, to the point of established health.

SECTION III.

History of the Symptoms of Fever connected with Contagion, the general tendency of the movement regressive or retrograde.

C. The contagion of fever is applied to subjects who, in their ordinary state of health, exhibit marks of temperaments of different character; and among others, it is not unfrequently applied to persons who manifest the signs of what may be designated the gangrenous. The gangrenous temperament is sometimes general, or epidemic in certain districts of the earth, at particular but unascertained periods of time; it is frequently produced artificially, especially in military service, by the act of crowding masses of men into damp ill-ventilated apartments, or by crowding sick persons into ill-constructed and ill-conducted hospitals. The disease, which occurs on this temperament, is sometimes simple in form and moderate in force; sometimes complicated in mode, concentrated and violent in degree.—I shall give, in as few words as I can, the outline of the two conditions.

1. The simpler form of the fever, as occurring

in fevers of the gangrenous temperament, usually begins with more or less of head-ache, chilliness, and other symptoms common at the commencement of fevers. The chilliness is often a mere sensation of coldness, or want of warmth. It is ordinarily of long continuance: the heat, which succeeds, is rarely strong or freely evolved: the skin is usually dark, sometimes marbled, not unlike the skin of persons affected with sea scurvy; it is sometimes tender of the touch. The countenance is usually cloudy and dull; the eye usually of a pearly whiteness, and of vacant expression. The tongue is generally red, often moist, not foul, sometimes smooth, sometimes rough. Thirst is irregular, rarely high; the appetite is impaired; hot tea, or other hot liquid is often grateful. The body is generally open; often loose, the stools watery; sometimes dark and offensive. The pulse is rarely excited, frequent or strong, as a febrile pulse; sometimes it is difficult to say in what it differs from natural, except in defect of energy.

The disease, formed on this base, proceeds with risings and fallings at particular times, but without marks of distinct remission, to the fifth, oftener to the seventh day. The action of the vascular system is sometimes so distinctly evolved at that period, that perfect crisis is the consequence; sometimes the evolution is marred, the crisis necessarily incomplete. At a certain

period from the crisis, perfect or incomplete, a new train of febrile action commences on the same, or on a different base. It tends to termination according to the law of the base on which it moves, progressive or retrograde. If progressive, the expression of life and activity expands throughout the vascular system; the skin becomes warm and animated; the cerebral function moves with energy, sometimes with a degree of excitement amounting to delirium. The whole of the febrile operation indicating an accession of animation, the general tendency of the act is towards crisis, or change at the first septenary period. If the course be retrograde, the sphere of the circulation is gradually contracted, or expanded and contracted by turns, the contracting character predominating upon the whole: the tongue is then dry, often covered with a black pellicle or scurf; sometimes dry, red, and glossy; the countenance is dark and cloudy, often collapsed or sunk; the eye is vacant in expression, often of a pearly whiteness; the skin is dry—not animated; it is thick and torpid; or damp and greasy; sometimes tender of the touch; puffy, and so inelastic, that pressure on the arm or other part of the body, applied with the force necessary to aid the patient to change his position, actually sometimes occasions vibex. Gangrenous abscesses are not unusual at the lower part of the spine, or others that are subject to pressure;

petechiæ and vibices are more generally diffused, death takes place gradually and silently in some cases ; it is precipitated in others by the super-vention of convulsion.

2. The complicated and more aggravated form of the disease, as laid on this basis, (such as usually occurs in highly infected hospitals or other crowded and infected places,) usually commences with disagreeable sensations at stomach, distension, nausea, sometimes vomiting, sense of coldness, or want of natural warmth, extreme feebleness—absolute inability. Pain in the head, which is a common symptom in fever, is here sometimes nothing more than a sense of heaviness and oppression, a stupor, like deep intoxication; sometimes it is rending and scarcely supportable. It sometimes comes on gradually, sometimes suddenly, as if occasioned by a blow from a hammer; it is followed in some instances, by a fit of apoplexy or epilepsy. The appearance of the eye and countenance is different from natural. The difference strikes the eye of the observer impressively; it is so peculiar in kind that it is difficult, if possible, to delineate it accurately or intelligibly in words. The eye is sometimes glossy, vacant, idiotic—the white of a pearly whiteness; sometimes it is muddy, dusky, confused, and threatening; sometimes heavy, torpid, the expression desponding, or piteous. The countenance is sometimes full, swollen, inanimate; sometimes

livid, dark, and grim, as in sea scurvy ; sometimes dry and shrunk—withered like a plant fading from want of rain ; sometimes it is damp, flaccid, and dirty, as if it had been washed with greasy water. The skin, as corresponding with the countenance, is sometimes dry, withered, and impervious ; sometimes damp, clammy, dirty, and greasy ; sometimes thin, torpid, dark, and marbled, especially at the knees, and on the hands and feet. The tongue is often moist, its surface covered with a thick coating of cream-coloured mucus ; sometimes it is clean, moist, smooth, and flaccid—without prominent papillæ ; sometimes it is rough, but not foul ; sometimes it is foul, covered with a meal-like paste—generally, or in patches ; sometimes it is swollen, livid, or leaden-coloured—not under the command of the will, in the utterance of speech. The taste is usually vitiated ; there is seldom desire for food of any kind ; spoon meat is, notwithstanding, often swallowed with indifference. Thirst is irregular ; sometimes great, sometimes little noticeable. Nausea occurs frequently ; vomiting sometimes ; where vomiting occurs at an early period, it is often, as accompanied with a thick and torpid skin, irrestrainable. The body is irregular, sometimes constipated, sometimes loose, the evacuations watery, sometimes bloody—with or without griping pain ; ineffectual of relief. The secretion of urine is not unfrequently diminished in

quantity; and, while diminished in quantity, there is often pain, with difficulty, in voiding it. Marks of stricture on the chest are not unusual, viz. a dry teasing cough, inability to expand the lungs without sense of local impediment. The pulse, during the early stage, is various. It sometimes differs little from natural; unless in a certain impression of torpor or want of energy, which is not easily defined; sometimes it is tumultuous and irregular, frequent in time, interrupted in manner, so as to give the idea of something struggling against oppression: it is generally defective in force of contraction and freedom of expansion. The condition of the animal heat is manifested irregularly in different persons, and at different parts of the body of the same person in a multitude of instances. It is rarely high on the extreme surface, and at the extremities—hands and feet; and where high, it does not impress upon the hand, which touches the skin, that idea of active movement in the matter of heat which obtains in forms of a progressive tendency. It is in fact, ardent, strong as in a condensed substance, caustic and deep seated, distributed irregularly, high at the præcordia and on the trunk of the body; not increased, sometimes diminished at the extreme surface, and on the extremities.

The disease proceeds, as moving on this base, to termination or change of mode with more

or less rapidity; and, according to the nature of the causes to which the subject is submitted designedly, or by accident, with more or less variety in the act. The course is, for the most part, soon run. In one of the modes, particularly where the cause is received from a concentrated source, and where the subject of it is confined to the impure and heated air of a crowded apartment, the stupor and confusion in the head, which are conspicuous at the commencement, increase rapidly; the skin becomes dry and dingy, thick and torpid, sometimes of a dusky, brown yellow; the heat unequally distributed—(high at the præcordia, not increased, perhaps diminished at the extremities,) makes an unpleasant impression on the hand of those who examine into its condition; the pulse is tumultuous or oppressed; the mental perceptions dull and absorbed; or irritable and agonizing through apprehension. In this state of stupid insensibility, or agonizing distress, a tumultuous convulsion, or a sudden calm supervenes, sometimes on the third, sometimes on the fifth, and sometimes not until the sixth, seventh day, or later. The power of life is overwhelmed in one case, the course soon terminated; in the other, the course is comparatively protracted, the approaches to death gradual, indicated by marks of venous stagnation, petechiæ, vibices, hæmorrhage, &c. Sometimes, instead of distinct marks of retrocession,

or of tumultuous convulsion at the periods now stated, the action of the vascular system expands; heat is diffused to the surface and extremities, the diffusion followed by perspiration, or other copious evacuations, sometimes by hæmorrhage, and sometimes by the explosion of gangrene, or semi-gangrenous abscess on an external part. In others, the caustic heat of the surface, the thick and torpid state of the skin, the excited action of the heart and arteries continue in almost an equal tenor for three or four days, or more; when, instead of perspiration, hæmorrhage, or local deposition, the ostensible febrile irritation abates gradually, the skin continues dry and constricted; the course of retrocession commences, and proceeds, at different rates of progression, and with different appearances, as influenced by contingencies: petechiæ, vibices, hæmorrhage, are frequent occurrences. Premature death is common in crowded hospitals, where the air is heated and rendered impure by animal exhalation; in such case, it occurs not unfrequently without marks of struggle from disease, even sometimes without apprehensions of danger. Premature death is rare in sheds and huts; or in dwellings that are perfectly ventilated: the symptoms are then often violent comparatively; but the mortality is comparatively little.

SECTION IV.

*Outline of the History of the Fever in its
Secondary or protracted Course.*

D. The description now given relates to what may be termed primary ; that is, comprehended within the first septenary period of the distinctly formed fever. A crisis, even sometimes a considerable interval of exemption from ostensible forms of febrile action, is observed at the termination of the first septenary period ; oftener, instead of crisis, there is only a temporary and imperfect suspension, which is succeeded almost immediately by symptoms, similar or different in character from the preceding, according to circumstances. Sometimes, instead of an interval of suspension, a disease of new symptoms is, as it were, accumulated upon the extremity of the primary, thus complicating the form, and apparently disturbing the regularity of the febrile periodic movement. The circle of febrile movement which commences at this period, and which may, without impropriety, be called secondary, proceeds, after it is formed, to a defined termination, whether recovery or death ; or to another change, which proceeds to

its own termination, whatever it may be, near or remote. This seems to be a law in the system; and it is further remarked, that these secondary circles of febrile action, whether tending to evolution and recovery, or retrocession and death, are, for the most part, of more equal tenor in their mode of proceeding than the primary, whether the tendency be forward or retrograde, and whether it be manifested more generally, or more locally.—I only notice two general modes.

1. The secondary course, whatever may have been the nature of the primary, is at one time characterized by development in the action of the vascular system; which, tending to, and manifesting activity in the outer circle, effects a crisis by the skin, or other outlet; at least, apparently conduces to it. In this case, the action of the heart and arteries becomes energetic, free and expanded; the skin becomes warm and animated; the secretions are in some degree restored; the function of the alimentary canal becomes effective; thirst continues considerable as febrile thirst; the tongue is covered with a rough and brown coat, more or less dry; the eye is clear, often brilliant and expressive; the countenance flushed and animated; the intellectual function disordered, the ideas lively, often extravagant; seldom outrageous. At a certain period, generally the seventh from the commencement of the existing

train of symptoms, the skin begins to relax; the coat, which covered the tongue loosens and separates; the urine deposits a sediment; signs of crisis appear, sometimes distinct and permanent, sometimes obscure, and temporary only, as followed by another circle of febrile irritations at a short interval.

2. Sometimes, after a state of high excitement which had not developed itself, whether from something epidemic in the constitution of the season, the nature of which is unknown, or from the more obvious effect of an impure atmosphere, produced artificially in crowded hospitals, or other crowded places, the symptoms of the secondary course of this fever assume the retrograde course or gangrenous tendency from their commencement. In one case, the tendency to stagnation is manifested by slow and gradual advances. The pulse is regular in mode, not frequent in time as a febrile pulse, it is without quickness and energy in contraction. Respiration is sometimes calm, sometimes heavy; the eye is clear, often of a pearly whiteness; the skin is dark as in sea scurvy—marbled in some places, dotted with petechiæ in others; the tongue is sometimes smooth and moist, oftener black and dry; the intellect is obtuse; delirium is little conspicuous. The approaches to stagnation and death are gradual, or signs of resuscitation, effected by chance, or through medical aid, manifest

themselves at an extreme point of depression ; and, when manifested, sometimes advance by almost imperceptible steps, to a state of activity. In another, after a state of high vascular excitement, delirium and furious struggling, convulsion sometimes supervene, followed by apoplexy, coma, and death ; sometimes, a sudden explosion of gangrene takes place on an external part, which, though it appears to save life at the time, not unfrequently proves fatal by its consequences. In a third, the commencing or early stage of the secondary course is characterized by marks of congestion, slow circulation, or stagnation of venous blood in the substance of the lungs, liver, spleen, and even in the sinous veins of the brain. The disease, which commences its secondary course in this manner, preserves, unless forcibly changed by art, the influence of the gangrenous tendency throughout, manifesting various local stagnations exteriorly, as vibices, hæmorrhage, &c.

SECTION V.

Outline of the History of the Fever, as manifested in Forms of prominent Local Action.

E. Besides the forms of contagious fever, acting on a general base as described above, a form of disease connected with a contagious cause, is not unfrequently manifested so prominently upon one particular part, or upon a series of parts as to absorb the general character of fever, and thereby obtain a local denomination. The gastric, the dysenteric, the pneumonic, and the cerebral, are the more common and the more important: the pustular terminating in ulcer, is not rare; it is often serious in its consequences among the military.

1. The gastric, endemic or epidemic, may, if I am not mistaken, be considered as the source of contagious fever, especially as produced among the military. But, independently of that, the gastric is a mode of action which contagious fever not unfrequently assumes, even when it arises from a source of direct contagion. It appears most frequently, under this form, in crowded barracks, and crowded transport ships. As a disease in the primary course, it is prin-

cipally distinguished by a foul and white tongue, more or less dry; by bad taste in the mouth, thirst, desire of cold water; want of appetite; irregular bowels; distension of the stomach and hypochondria; dreaming, reverie, want of sleep; head-ache; anxiety; restlessness; harsh and dry skin. In the secondary course, the tongue is often red, rough, and dry; sometimes dry, red, clean, glossy, or shining as if it were covered with varnish; sometimes it is dry and foul, covered with a black pellicle or scurf extended to the gums, teeth, and lips; which, when removed, is soon reproduced, as if the effect of a peculiar morbid process. The skin is generally harsh and dry, or clammy, damp, and greasy; sometimes it is dingy and withered. Anxiety and distress at stomach are sometimes annoying, viz. eructation, distension, inflation of the hypochondria and abdomen, like tympany. The function of the alimentary canal is materially disordered; the bowels loose, the evacuations often watery—of a sickly, offensive smell. Nausea is common; vomiting not rare; thirst irregular, sometimes urgent; sleep is disturbed with dreaming and reverie; sometimes altogether wanting. The eye is often clear, glossy, with a peculiarity in expression, known to those who observe with care—not easy to be described in words. The countenance is sometimes flushed, as if erysipelatous; sometimes dry, dingy, and sallow, shrunk and withered; or damp, greasy,

and dirty. The pulse differs little from natural in many cases; it is frequent and irregular in others. Respiration is sometimes hurried, almost to panting; the mode of hurry, fluctuating and uncertain, as if connected with the stomach and diaphragm, rather than the lungs.

2. The dysenteric is a frequent form of disease, connected with the contagion of fever, where the soldier lies on the damp ground, or on rotten straw under canvas, in damp, cold and foggy weather. The gripings are sometimes severe; the evacuations frequent, watery, sometimes mucous and bloody; the skin sometimes hot and dry; sometimes clammy, cold, and unpleasant to the person who touches it; the pulse is rarely frequent, sometimes scarcely febrile. The dysenteric form ceases, or rather gives place to general fever, when the subject of it is removed from his bed on the cold damp ground, to a warm bed in a crowded hospital. As primary, the dysenteric form cannot be said to be common, unless as produced by obvious artificial circumstances; as secondary, it is frequent, more frequent in fact than perhaps any other, particularly in damp, crowded, foul, and cold sick quarters; it may be said, indeed, to be the directly fatal form, or contingent termination of the greater number of contagious fevers in most scenes of military service. Where it exists, the pains and gripings in the bowels are often severe; the stools mucous, bloody, and offensive;

the tongue is sometimes foul and dry ; oftener clean, red, and moist ; sometimes scarlet, red, and glossy ; the skin is dry and parched for the most part ; sometimes clammy, damp, and greasy ; the pulse is often, not always, frequent ; the urinary secretion is irregular ; the eye and countenance express despondence and distress ; the flesh wastes fast ; and though there are occasional abatements and recurrences, there is little promise of recovery, from a confirmed state of the disease, without other means of treatment than common military hospitals can supply.

3. A pneumonic form of fever, connected with a cause of contagion, is not uncommon in the dry, cold, and frosty weather of winter ; or in dry weather at the beginning of spring. The symptoms are then often violent ; sometimes they alternate with symptoms which belong to the function of the cerebral organ : the form is, upon the whole, dangerous, even in its primary course. Where pneumonic symptoms continue prominent for a length of time, a copious expectoration of puriform mucus not unfrequently makes its appearance, sometimes continuing long, and presenting itself under such aspect, as to impose on many for real purulence. It is in reality a vitiated secretion from the mucus membrane. It accompanies a disease of a protracted course, the pulse retaining preternatural

frequency, and the contagious property adhering to the habit for a length of time.

4. The cerebral form of fever, connected with a cause of contagion, is common, the symptoms so prominent on some occasions as to obscure all other expressions of the disease, even in the primary course. In the secondary, the functions of the sentient system, viz. organ of intellect, or instruments of locomotion, are more uniformly affected than any others. In one case, the patient is more or less delirious, the delirium of the cheerful and animated kind, the pulse expanded and regular, the movement progressive to the exterior circle. In another, the delirium may be called incoherence merely, stupor, coma, indifference—a condition generally accompanied with a weak and frequent pulse; sometimes there is restlessness without sleep; sometimes tranquillity without pain or uneasiness; sometimes there is fretfulness and impatience; the mind alienated, employed in adjusting the bed-clothes, catching of flies, or other odd and estranged employment; sometimes there is mental derangement without marks of bodily disease; sometimes an idiotcy, with a slow return to bodily health. In other cases, the locomotive power is principally affected, viz. startings, tremors, twitchings, and tendency to convulsion; tremblings, in making the attempt to move individual parts, as from

want of power ; inability to raise the head, or to maintain the erect position ; a disposition to lie on the back, and to slide down in the bed ; the eyes half shut, when apparently in sleep ; swallowing difficult ; urine and stool voided involuntarily, or unconsciously ; emaciation extreme ; the eyes sunk and hollow ; the pulse of great frequency, sometimes almost countless, small, weak, intermitting, suppressed, &c.

5. Pustular and ulcerative forms of disease, connected with a cause of febrile contagion, have occurred within my own experience on different occasions, in a manner so unequivocal that, however wild the opinion may be thought to be, I cannot, without sacrificing to popular prejudice, what appears to myself to be truth, refuse to give them a place in the present chain of febrile actions.

CHAPTER V.

Dissection.

THE traces of diseased action, which appear in the bodies of those who die from the effects of contagious fever, differ according to the time at which the person died, or the form of action which the disease contingently assumed during its course. The contagion, which excites that form of action which has obtained the name of fever, cannot be discerned by the strictest human sight; the effect, which the febrile act produces, is in like manner invisible. But, though invisible to the human eye, it is presumptively a substance of tenacity and density which, attaching itself to the serous or excrementitious part of the blood, solicits expulsion from the system through a channel of excretion. It moves an act which implies expulsion; but it is not clear that the act induces such change upon organic structure as leaves discernible traces of the effect on the body after death. If this be so, and it is reasonable, and almost demonstrative that it is so,

we are warranted to conclude that the changes, which appear in organic structure after death, are changes contingent to the action of common disease, not the direct product of the action of the contagious process. The action of the contagious cause, which appears to be directed to surfaces of serous, invisible secretion, cutaneous or other, is, in some manner, constrictive. It operates a change in the qualities of the secretion; but it operates it with so little violence, that no perceptible trace is left behind as a mark of the operation. Adhesion, purulent suppuration, congestion, &c. are foreign to its nature. But, though a visible change of structure does not belong to the operation of the cause of this form of disease; visible, and even considerable changes are observed not unfrequently in the bodies of those who die within the limit of the disease's action. They may, in so far as I have observed, be comprehended under the following heads. Where convulsion or other violence was the forerunner of actual death, the sinous veins within the head were generally turgid, literally engorged with black blood, more especially in relapse. Where the violence of the disease ceased suddenly, by what seemed to be an explosion of gangrene on an internal part, the peritoneal coat of the intestines was often in a state of black gangrene, without marks of local inflammation having preceded; the liver, spleen, and sometimes the

lungs were filled with grumous blood. These appearances occurred frequently as the first act of the disease in its relapsed form, in highly infected and ill-ventilated hospitals, in cold, damp, and foggy weather; they were rare in the opposite circumstances. The contagious fever, when of a protracted course, often assumed the dysenteric form; and, in such form, often terminated fatally. Where the termination was fatal, the inner coats of the alimentary canal were often loose and dissolved into bloody mucus, sometimes ulcerated and deeply corroded, oftener separated generally, almost through the whole extent; the exterior coat, black as if gangrened. Serous effusions into the ventricles in the brain, into the thorax and other cavities were observed occasionally. The substance of the brain was sometimes firm and full; sometimes flaccid and liquescent. Suppuration in some cases, adhesion in others, were observed in different places; but these, and most others were contingent to the disease, not the effect of the action of the disease itself. The stomach and intestinal canal were sometimes pale, colourless, and inflated; sometimes flaccid-withered, dry—without moisture or unctuousity. This condition, which was not an unfrequent one, may be thought to be more nearly connected with the radical character of the disease than any of the others.

CHAPTER VI.

Differences in the Forms of Action excited by the Cause of Endemic and Contagious Fever, usually called Diagnosis.

THE impulse of the atmosphere, which pervades the surface of the earth, applied to the appropriate organ of the human frame, presents itself as the ostensible cause which maintains the action of the machine in that state of balance which has obtained the name of effective health. This seems to be the fundamental law in the constitution of things. It obtains generally ; but it is subject to contravention. It is observed, on numerous occasions, that the admixture of exhalation from certain points or particular tracts of the surface of the earth, as well as the admixture of emanation from the bodies of human beings in certain conditions of bodily indisposition, robs the atmosphere, (if the expression be allowable,) of its constitutional salutary quality ; and, whether by irritation or other cause, effects change or subversion of the

ordinary act of health, even engrafts a new act on the habit, which is termed disease, and commonly distinguished by the name of fever. The act, which arises in consequence of admixture with the noxious exhalation from the surface of the earth, is often dangerous to life by direct effect; it has, as left to itself, no consequence beyond the act. The act, which arises as a consequence of emanation from the bodies of men in certain conditions of disease, while productive, or contingently connected with an act which is directly dangerous to life, originates a form of action which manufactures a material, more especially as modified by circumstances, which is analogous to the cause which produced itself; and which, thus produced, multiplied and deposited upon a foreign medium, is capable of being communicated to persons and places distant from the source. The contagious fever is thus radically a different disease from the endemic; but, different in cause and different by consequence, as the two diseases are, the differences produced by the act, are so little striking that, though they may be discriminated by the experienced under the inspection of the eye, and the application of the touch, they are not so precise in their characters that they can with confidence be communicated to verbal description. I should not, for my own part, expect to be mistaken, under actual inspection, in fixing the diag-

nostic of the two diseases once in a hundred times. I do not know that I can make the grounds on which I form my opinion intelligible to others; I do no more, in the present case, than to point out the field, in which the differences may be found.

The fever, which arises from an endemic source is, for the most part, more rapid in its course than that which arises from a cause of contagion. The vascular action is excited more forcibly, the effect more directed to the grosser channel of circulation; thence producing perspiration, adhesion of parts, or increase and change in the character of the mucous secretions. The termination of the febrile circle is generally marked distinctly, the event calculable with some degree of certainty, as connected with visible organic action. The vascular act often moves irregularly in the fever which arises from a cause of contagion, sometimes excited, sometimes distressed, under the actual existence of the contagious process. When excited, it is rarely excited after a mode which elicits sweat and effects crisis; and, when depressed, it indicates something in the mode of depression different from simple weakness. A person, who is acquainted with the character of the two diseases, may obtain some diagnostic information from comparisons of expression in the vascular system, as the case is placed before him; he cannot even then form opinion with confidence

on that ground. The distinctive signs of the two forms of disease are seen most clearly in the expressions of the eye and countenance, and in the conditions of the skin generally: it is difficult, if possible, to convey the distinction accurately in words. The eye is sometimes brilliant and glistening; sometimes dull and vacant; the white is often of a pearly whiteness—glossy, sometimes livid; the expression is always peculiar, unlike the expression of the eye in health, or in other forms of fever. The aspect of countenance is more or less characteristic. The cheeks are sometimes suffused with a lively and animated bloom; sometimes pale and wan; sometimes damp, greasy—dirty in spite of washing; sometimes dry and shrunk, and withered like a blighted leaf: the peculiarity is cognizable by the experienced; it is not possible to convey an expression of it intelligibly in words. The condition of the skin affords, in all its expansions, the surest diagnostic of this form of the disease; the signs are most obviously expressed in the countenance and exterior tunic of the eye. The touch, wherever the hand is applied, receives an impression which gives unequivocal proof of the changed condition of the exterior cutaneous expansion. The impression, communicated by the exterior heat, differs from the impression communicated in ordinary health, or in the ordinary forms of endemic fever. The degree

fluctuates irregularly; it moves in streams as by explosion, sometimes sharp, pungent, caustic and disagreeable, unequal at different parts; and, whether above or below the natural standard, as measured by a thermometer, not of the kind which communicates a sensation of agreeable warmth to the hand of an indifferent person. The skin itself is sometimes dry and hot; constricted and comparatively dense or torpid; sometimes dry, and erysipelatously suffused, tender of the touch, as if it had been bruised or beaten—harsh and unpleasant to the touch; sometimes it is damp, greasy, bedewed irregularly with viscous moisture; the impression unpleasant, indicative of the existence of a diseased process within its substance. When it becomes warm, soft and unctuous, covered with fluid and free perspiration, the process generative of contagion, may be considered as terminated. The tongue has generally something in this disease that is peculiar in appearance—different from the tongue in health, or in common forms of fever. It is sometimes moist, clean, and preternaturally red, smooth, or without prominent papillæ; sometimes red and rough, irregularly moist or dry; sometimes it is foul, covered with a whitish slimy coat, moist or dry irregularly—an appearance not uncommon where masses of men are crowded together in ill-ventilated quarters, transport ships, or infected hospitals. It is often, particularly in

the advanced stages of the disease, smooth, shining, glossy and red ; sometimes moist, oftener dry ; sometimes cracked, parched, and arid ; it is frequently covered with a black pellicle or scurf, which extends to the gums, teeth, and lips. But, various as the circumstances may be, the condition indicates in all cases, when accurately examined, the existence of change in action and function, not only from what belongs to health, but from what belongs to fevers of the endemic class. Besides the signs of distinction, observable by the eye and touch, between the endemic and contagious fever, the atmosphere of the subjects of the latter description communicates, to the sensations of most persons, an impression which indicates the presence of something noxious in the habit of the individual, or in the mass of sick who are collected in the wards of an hospital. The sensation is often accompanied with an increased flow of saliva, a maukishness and desire to spit ; sometimes with sensations of disagreeable heat and huskiness about the throat, frequently with a sense of burning about the upper orifice of the stomach. The impression now alluded to is decisive of the existence of contagion to many ; others do not advert to it, so as to discriminate.

CHAPTER VII.

Suggestions respecting the Character of the Cause of Contagious Fever, and its Mode of Operation on the Animal System.

A GREAT deal has been written concerning the cause of fever, that is, the nature of the material which constitutes the cause, and the first act of its operation on animal life. I have neither time, inclination, nor ability to examine the various doctrines, which have been held on this subject, in a critical or systematic manner. I cannot, according to the view which I have taken of the means to be employed for the cure of fever, suppress the suggestions which have obtruded on my notice in a course of observation during a long period of experience in fields fertile of disease in all its forms. The material cause of contagious fever is held, by the most distinguished physicians and teachers in recent times, to be sedative in its nature; the act debilitating in its effect. The opinion is important. It leads to stimulation as the main

remedy ; and, if the assumption be not founded, it leads to important error. There seems to me to be ambiguity in the term sedative, as commonly understood. In strict interpretation, sedative expresses the action of means that are abstractive of the customary stimulation of healthy action, not means that are subversive of that action, and indicative of action of an opposite kind. The means which effect that change must be necessarily considered to be means of an irritative nature ; inasmuch as they produce a new form of life as a result of excitation. The form produced by the cause of contagious fever is generative of its kind ; it cannot, therefore, by any interpretation of language, be regarded as sedative, or held to be debilitating in any other sense, than as it is subversive of the customary action of health. If this view be correct, the base of the practical act of the physician is totally changed. The new act is unnatural or diseased ; the first act of the remedy must therefore be directed to effect its arrest ; for that is preliminary of health's reproduction. This is clear. As it appears to myself, it is all that can be said on the nature of the cause of fever, and the primary mode of its action ; and, having premised this general outline respecting the nature of the cause and its primary operation, I shall now state, concisely, my opinion of the manner, in which the material of the cause enters the sys-

tem, the rate at which it has appeared to advance towards the centre or source of life, the mode and rapidity with which it is dispatched, as it were, from that centre to strike upon a particular organ, or series of parts, where it assumes an ostensible form, discriminative of character.

When a person, not all persons, but most, enters within the circle of an infected sick ward, his sensations are often disagreeably impressed by something connected with the atmosphere of the sick. A disagreeable maukish taste in the mouth, an increased flow of saliva, a desire to spit out something that is unpleasant, a feeling at the throat—dry and husky, as if from the irritation of an acrid disagreeable pepper; a sense of heat and irksomeness at the upper orifice of the stomach, distension, even nausea, a desire of cold liquid, an aversion from food, &c. take place in different degrees in different persons who have been exposed to the influences of infected air. These impressions are followed by consequences at different periods, of different kinds, and of different degrees of intensity. The noxious cause, which floats in the atmosphere, and which is applied by its means to the surfaces of the skin, interior and exterior, appears sometimes to adhere to the lining or interior coat of the alimentary canal for many days, without producing general fever. It sometimes does not pass beyond the surface of

that canal, appearing to be diminished by one or other of the numerous contingencies to which that surface is exposed. Sometimes within twelve hours, but in general not until after several days, and even sometimes weeks, it is carried forward, by what channels is not distinctly known, to a central point in the system; where, making impression, it excites motion through which a figure of action, if one may so speak, is given to certain tissues in organic structure, or to a particular series of parts in the membranous expansions, which constitutes a disease of a particular form and character. In this case, we discover, or conceive we discover one series of parts, upon which the external impression is made by the impulse of the morbid cause; a channel, through which the material of the cause is conveyed to the common centre; and instruments, transmitting, with electric velocity, a capacity for creative power to a particular organ, or series of parts, which thus become the subject of unnatural action, or engrafted disease. It thus appears, in the common history of the case, that the cause of contagious fever enters by the mouth, so as to make its first impression on the interior of the alimentary canal. It advances, though by channels not distinctly known, and irritates the common centre to an unnatural act. As the act produced corresponds with the nature of the irritation applied, the irritation excites a

form of action on a particular series of parts, which generates a material similar to itself, and thus propagates itself through a multitude of subjects.

The contagion of fever is not visible to the eye; it is notwithstanding a matter of substance, capable of condensation and diffusion. It is a matter of excretion, inasmuch as it infects materials that are in contact with the body of the subject; but, being subtile, so as not to be visible, it must be necessarily supposed to be produced through the minutest series of serous vessels—the instruments of invisible exhalation. The vessels of invisible exhalation penetrate the skin in all its expansions, interior and exterior; and, as the invisible exhalants appear to be the organs of the contagious process, the cutaneous expansion is necessarily the local seat of the disease. The fact is cognizable by the eye to a certain extent; it is in a manner proved by the efficacy of applications, in arresting the contagious process, in proportion to the force of their action on the cutaneous expansions. The contagion of fever does not, as acting on the minutest series of vessels, much disturb the balances of the system; and thereby, according to its own act, endanger life. The dangers of the disease are contingent, and also its duration. It does not appear to attain a crisis through a sensible process of its own operation; such at least as we are able to trace and

calculate. The course is often terminated abruptly, or health is instantly restored by the impulse of causes, which act powerfully on the skin, externally or internally, viz. emetics, blisters, steam baths, warm and cold bathing alternated, and long-continued gestation in convenient vehicles in open air. The contagious fever cannot be said to terminate distinctly by crisis in its own act; it is, however, often connected with circles of febrile action, which move on other bases, and which, terminating by crisis, not unfrequently imply, in their own termination, the cessation of the contagious process; hence it is brought to issue contingently, and by force: sometimes the circles of contingent or complicating fever cease, the contagious process subsists, under appearances of general convalescence.

CHAPTER VIII.

*Summary Notices of comparative Mortality
from Contagious Fever.*

THE returns of hospital casualty are important documents to the professors of medical science, inasmuch as they give grounds, for those who reflect, to form opinions concerning the causes of results which are often widely different in scenes that are thought to be similar. If mortality, from contagious fever, amount in one instance, to one half of those admitted into a military hospital; and, in another, scarcely to one in one hundred, the difference is striking, and so important as to solicit enquiry into the cause or causes which produce it. If the causes be obvious, which they frequently are, no one will pretend to say that it is not the imperious duty of those, who have power to order and to act, to endeavour to obviate their operations; at least to endeavour to diminish the injuries of their effects, in so far as it is possible to diminish them. It is to be regretted that hospital

returns are rarely so digested, as to furnish authentic and precise information respecting relative degrees of mortality in different classes of disease; and that the histories of hospital economy are rarely so detailed, that accurate opinions can be formed of the true operation of the causes which influence the result. I shall endeavour to collect, and put before the public an outline of the informations which my own experience, or the authentic reports of others which have fallen in my way, supply. The information is not complete; for my situation is insulated, and my store of medical books is small; but, such as it is, I believe it is sufficient to establish, beyond controversy, the cardinal points upon which the varieties, in event, may be allowed to depend. I go no farther back than to the beginning of the war 1793; for that, and the war 1803 have furnished materials which, were they properly estimated, may be deemed sufficient to supersede the necessity of going to other sources of information.

The sick of a division of troops, placed under the command of the Earl of Moira for a special service, were collected into a granary at Southampton about the beginning of the year 1794. The proportion of deaths to discharges from that receptacle is not known to me with official correctness: I am safe in saying, that it was not less than one in six. It was materially lower among such as were kept at the regimental

infirmaries. In the regimental infirmary of the Buff or 3rd regiment of foot, one of the corps which belonged to Lord Moira's command, it did not exceed one in one hundred. The mortality from contagious fever is known to have been enormously high in general hospitals on the Continent in the latter end of the year 1794 and beginning of the year 1795. The precise proportion of deaths to discharges is not perhaps known to any one. It was stated by a military officer of rank and observation, who was stationed at Rhenen on hospital duty in the year 1794, to have amounted to three out of five of those admitted. There is reason to believe that it was not under one in five at any of the great depots in Holland. It was materially lower in most of the regimental infirmaries; in the 3rd regiment of foot, it did not amount to one in one hundred. A proportion of the sick, of what was called the St. Domingo expedition, was collected into the barracks of Westmoreland Fort on Spike Island, at the Cove of Cork in Ireland, in the latter end of the year 1795, and beginning of 1796. The official return is lost. I am safe to say from memory, that mortality was not less, if so little, as one to five among those who were received into the barracks in the Fort; it did not amount to one in fifty among those who were received into the sheds and huts which were on the outside of it, near

the sea beach. The proportional mortality in the Russian auxiliary force which served the campaign in Holland 1799, and which was cantoned in the Islands of Jersey and Guernsey in 1800, though stated from memory, the official returns being mislaid, is not stated as here given, lower than the fact. The deaths were numerous in the island of Guernsey prior to the 12th of January 1800. From the 12th of January, until the disease entirely ceased, they did not exceed one in thirty: they were somewhat higher in Jersey. The proportional mortality stands as one to thirty-two among the febrile sick at the army depot, from the 1st of March to the 10th of July 1801; as one to twenty-three from the 18th of July to the 31st of December, under circumstances of as great aggravation as could well be supposed to occur in England. The proportional mortality among the febrile sick, who were collected into hospitals at Portsmouth and the vicinity after the return of the army from Spain in the year 1809, amounted, according to official returns, to one in seven: it was said to be lower at the cantonments of the corps in their own regimental infirmaries. The proportional mortality from contagious fever, in the hospitals in Spain and Portugal, is not within my knowledge; but from the prevalence of the disease, and the great annual loss of the army by death, at least until

the latter campaigns, when the medical arrangements were laid on a new and better basis, it may be inferred to have been high.

I have no means of obtaining a series of returns from the various hospitals of the united kingdom, so as to have it in my power to present to the reader a varied and connected view on the subject of proportional febrile mortality among the civil part of the community. Some reports of houses of recovery, and particularly the detailed reports of the Manchester house of recovery for a series of years, have fallen under my notice. The proportional mortality has there fluctuated between one in five and one in twenty in different years since its establishment; the average, in the whole period of its existence is something less than one in ten. The reports of the London house of recovery give the proportional mortality as one in twelve, more or less, in a series of some years. It would appear to have been rather more at Newcastle-upon-Tyne, in so far as I am able to learn, but my information is not precise. The proportional mortality has seldom been so high as one in five, and seldom so low as one in twenty in what are called houses of recovery. The general average appears to be about one in ten, subject to variation at particular times from various contingent causes. It is difficult to ascertain precisely the proportional mortality among the population of the country, as dis-

persed in separate habitations. It is greater at some points of the country, and in some tracts of the same district than in others, also in some seasons than in others. It sometimes, from unknown conditions in the atmosphere, propagates itself with such facility as to be deemed epidemic; sometimes with such difficulty, that doubts actually arise whether or not it is of a contagious nature.

The proportional mortality, from contagious fever, is different in different circumstances; so widely different in many, that it is impossible to avoid the conclusion that mortality is contingent to, rather than inherent in the disease's nature. It has been so high on some occasions, particularly in crowded and ill-ventilated military hospitals, as one half of those admitted, often as one to five or six: it has been so low, especially in regimental infirmaries, as one to one hundred. The difference is striking; not credible as a difference inherent in the character of the disease. There are many causes which conduce to the production of this difference of effect; the condition of the atmosphere, in which the sick person lives, is the most conspicuous, viz. the condition produced by masses of sick persons accumulated in ill-ventilated apartments; or the condition of purity from the proper adjustment of means of ventilation. The second, and not an inconsiderable one, may, I conceive, be referred to prompt application of

remedy at an early period, or to neglect of suitable means under favourable opportunities for acting; to the application of remedies of feeble power, which is tantamount to neglect; or to the application of remedies of strong power, not calculated to the circumstances of the case. These are principal among the causes; there are many others which bear on the same point. The circumstances, which attach to sick in military general hospitals, and in the houses of recovery allotted to the reception of the poor of the civil community, agree in some points, and differ in others. It rarely happens that sick persons are sent to military general hospitals, or to houses of recovery at the very commencement of indisposition; consequently the medical officers of these establishments rarely have the opportunity of giving proof of the power which remedies possess in controuling or arresting the course of recent disease. Military general hospitals are almost always more crowded than houses of recovery; and, as they are not always, and on service scarcely ever, constructed expressly for the purpose of receiving sick, the means of preserving the air in purity are often inadequate; whence the atmosphere is sometimes so much corrupted as to be almost pestiferous; adverse to life in such an extraordinary degree that death takes place suddenly and unexpectedly—not unfrequently without ostensible appearances of danger. The

mortality is here artificial, viz. the necessity of living in an atmosphere deprived of the principle which stimulates the effective action of life; in confirmation of which it is observed, that sick of the same description who live in detached quarters, in barns and hovels, or even under hedges in the open air, die in a comparatively small proportion, though the symptoms of the disease are often of the severest kind. Few persons of advanced years, and few children are received into the wards of military hospitals. These establishments cannot, therefore, often complain of adventitious mortality from the constitutional infirmities of old age; they have not, on the other hand, the opportunity of lightening the amount of the mortality by the favourable balance connected with the condition of childhood or tender years. The subjects of military hospitals are, for the most part, persons between the ages of sixteen and fifty; those, who are beyond forty, appear to die in greater proportion from this form of disease than those who are under. The athletic and the plethoric, and, apparently on this ground, grenadiers, who are selected by size and weight of body, recover less fortunately than those of slender habit, particularly than the men of the battalion. It has been remarked, that persons in the higher ranks of life, die in greater proportion from the effects of this disease than the poor and miserable under all their disadvantages. I can neither

confirm or refute the opinion from my own experience. If founded, it may in some measure, be accounted for by the higher degrees of irritability, induced by high living, multiplying the chances of those complications through which this disease is usually brought to a fatal termination ; the dangers are also increased in no small degree by less efficient treatment. The poor man follows medical advice where he can obtain it ; the rich, at least many of them, are self-willed, wise as physicians, and little obedient to the injunction which does not correspond with their own prejudices ; they are thus, with the daily attendance of two or three medical men, often left to themselves.

CHAPTER IX.

CURE OF CONTAGIOUS FEVER.

SECTION I.

A Summary View of General Principles and General Remedies, as applied to the Cure of Contagious Fever.

THE limit of the present work, and were there no restraint from limit, the want of books prevents the author from discussing the subject in detail. So circumstanced, I refer, (and that only cursorily) to the principal of the opinions which have prevailed in my own time, more particularly in the latter period of it. The opinion assumed by men of eminence and teachers of the medical art, that the material of the cause of contagious fever consists in a power of a sedative nature, the act of which is debilitating, leads, by direct consequence, to means of stimulation as counteracting the effect; that is, as curing the disease. This opinion

was general, almost universal, in Great Britain, prior to the close of the last century. As the opinion was general, the practice which arose from it was generally diffused. It was carried to great extent by many; and, in military hospitals, it was almost the order of the day. The practice had thus ample trial. It cannot be said that it was inert. It produced changes which, on some occasions, subverted the diseased course; it produced effects on others which accelerated or precipitated death. There is no argument from reason that the theoretical opinion is founded in fact; there is no proof in experience that the inference from it has been successfully applied in practice.

A knowledge of the nature of the constitutional act, which follows the application of the cause of fever, and thus constitutes the disease, must be admitted to be preliminary to the institution of a plan of cure, general and systematic, and applicable to all conditions. The sedative nature of the material cause of fever, and the character of the debility which was supposed to be the consequence of its application appear to have been considered, after a lapse of some years, as questionable; the removal of the debility was proved, after numerous trials, not to be under the command of stimulation. In perplexity, as in want of a general principle for directing the application of remedy, certain of the prominent conditions

in the diseased habit were assumed by individuals, as the guide of practice. Among these, the supposition of the existence of inflammation, congestion, or other derangement in the functions of the liver, led to the exhibition of mercury as means of cure. The mercury was, in such case, often carried to the extent of inducing salivation, or ptyalism; the effect on the general issue of the disease was not unfrequently favourable. In other cases, an opinion of the existence of mesenteric congestion, or the actual presence of intestinal torpor, suggested the idea of effecting a cure by means of purging; the practice thus originating, obtained currency, and was carried to great extent by many: in numerous instances with benefit. The temperature of the body is often increased beyond the natural standard in febrile diseases; the excess of it considered by many as essential to the fever's existence. The abstraction of the excess by the application of cold, particularly by the affusion of cold water on the surface, was thus suggested as reasonable means of cure. From the decided benefit which followed the application of it in many cases, cold affusion was regarded at one time as a remedy of great promise: it is useful; it is, however, like the two preceding, a remedy of circumstance only.

An opinion began to make its way in Great Britain and other countries some years since, either from observation of the good effects of

blood-letting and other means of depletion, or from observation of morbid appearances on dissection after death, that the febrile act is in reality a mode of inflammation, more generally or more locally expressed; it is even contended that it is radically local, and primarily expressed on the structure of the brain, or its covering membranes. The supposition of inflammation does not admit of easy and clear proof as a radical act; it is often conspicuous as a contingent one. I do not pretend to say, (for I cannot prove) that it does not exist; but I may venture to say that before its existence can be safely assumed as a principle, upon which the basis of a general plan of cure is to be laid, it will be proper that its character be precisely defined. The inflammatory action which takes place in the animal system must be necessarily considered as an act of forward progress; an act of activity which produces something new. The mode of the act varies as it is manifested on different structures. If it be manifested on a series of visible vessels, the effect is suppurative; that is, concoctive, according to the phrase of the ancients. It is discharged by an excretory, or collected under a form of purulence, in a close cavity, in one case, it agglutinates; the completion of the agglutinating or adhesive process terminating the inflammatory act in another. These are the more common forms, and palpable effects of

inflammation, considered strictly as inflammation. Besides these, the surfaces of secreting membranes, particularly the mucous, experience not unfrequently inferior, or less acute degrees of inflammatory action connected with fever, if not the actual expression of the application of the cause of fever itself. Instances of general or local heat, pain and irritation arise occasionally, continue for a time with more or less violence, abate, or cease suddenly or insensibly, recur again, and again cease; give out no visible product during their continuance, and leave no trace behind them when they disappear. The mode varies according to the structure of the part upon which the cause acts. If not inflammation, it is of an inflammatory tendency. To this may be added, erythematic inflammations, which, acting on a particular series of parts, continues stationary for a length of time without distinct marks of suppuration or adhesion. It may be connected with fever; it is not the cause of the fever under view. I cannot pretend to say that no other forms of inflammation, besides the above, exist in the habit, and excite symptoms of general fever: none, to which I could give the name of inflammation have fallen under my observation.

The act, excited by the material cause of contagious fever, moves in channels of extreme minuteness. The human eye cannot discern the vessel, or measure its diameter; neither can

the human mind venture, with safety, to form opinion as to the mode of change which takes place in the vessel's action, whether inflammatory or otherwise. The product of inflammation is a visible, even a gross material. If inflammation be the act of the disease, the effect of the act might be expected to appear in dissection after death; yet, death takes place in many instances where no extraneous or diseased product can be discerned by the most penetrating sight. Inflammation is a forward or progressive act; and, though its progress, or its product cannot be discerned, it might still be supposed to exist, if experience did not furnish instances without number, where the primary action of the cause of fever actually is, at least is apparently connected with conditions the reverse of inflammation; that is, with congestion, a condition of circulation in the veins urging to stagnation.

Fever may be said to be an act of the general system; but, in saying this, it is not understood that every part of the system is equally under the febrile act. It is reasonable to believe that the impression of the febrile cause is made upon a surface, or a point of susceptible surface, presumptively the cutaneous expansion, exterior or interior. The impression is conveyed, through channels not distinctly known, to the common centre of the system, the seat of life and motion; and from thence, if one may use the expression,

it is dispatched to the series, upon which it was originally made, with a power productive of effect; that is, generative of formal disease.—The impression is made upon an exterior part or extremity; it receives form, and becomes fever through the instrumentality of the sensorium; the sensorium is not the seat of the disease; and I may add, that, where the substance of the brain, or its membranes, is affected, the effect is contingent and secondary, as effects on other analogous structures. The whole series of the structure, upon which the impression is made, participates in the diseased act; the act is, however, often expressed more prominently in one part of it than on another; a prominence arbitrarily and contingently changed in the course of the disease's duration. The impression is made primarily on one series; the effect is occasionally extended to others; it may exist in more than one; its activity is prominent only on one, at one time.

If inflammation, properly so called, be the primary and radical mode of action arising from the application of the cause of fever, a plan of cure, as laid upon that base, has, consistently with the principle, only one mode of proceeding, viz. reduction of excess by abstraction of blood, or other of the means usually called antiphlogistic. The success of the cure, as directed by this principle, is various—sometimes speedy and perfect; often protracted and in-

complete ; inasmuch as the remedy is minorative of the evil, not subversive of the base of its action ; sometimes it fails altogether, inasmuch as the remedy is only part of the means that are necessary to produce a decided effect. Besides the tedious recovery of health connected with the antiphlogistic principle of combating the disease, instances occur occasionally where the practitioner, by reason that none of the common signs of inflammatory action are discernible for the direction of his course, cannot be otherwise than embarrassed in what manner to proceed ; instances even occur, where the existence of something contrary to inflammation is reasonably suspected. In such case, the act which proceeds on this base, proceeds at random, or contrary to reason.

The principles assumed for the direction of the general cure of fever, whether resting on a supposition of debility, which implies stimulation as a remedy, or on a supposition of inflammation, which implies abstraction of blood and other processes of depletion, do not appear, as judged by experience, to give all the success to the practice that medical practice ought to have. The author has ventured to open a new ground. He speaks with humility ; but he thinks he is entitled to speak with confidence, when he asserts, that more success is attainable from remedy, by considering the febrile act as an act changed from the action of health by an

expression beyond just balance in force and activity at one time ; by restriction, repression, or other cause which apparently diminishes the expression of open force at another, than by considering it as uniformly depressed, or uniformly excited. The diversity of condition is founded : the supposition of its existence has this advantage, if it have no other, that it obliges the physician to consider the case before he writes his prescription. He is here under the necessity of observing and judging from observation ; for he is responsible for what he does. He cannot shield his error under a name of authority ; for his predecessors can in fact do nothing more for him than point out differences, and put him in possession of the virtues and powers of general remedies. The precise measure in application must rest on his own judgment ; the responsibility, under which he acts, may be thought sufficient to induce him to exercise it. It will not, I believe, be denied, by any one, that the action which arises from the application of the cause of fever is a new mode of animal life. It runs a course, and terminates, in a given time, with the product of an effect : the effect is sometimes fatally oppressive of the life of the general system ; sometimes favourably liberative ; so as to leave the vital condition open to the action of causes which stimulate and maintain the customary movements of health.

If a change in the mode and balance of action, in the organic series of the animal system, be admitted to be essential to the existence of fever, the arrest of the diseased course by such means as are best calculated to effect the arrest, with the least chance of endangering general life, is necessarily the first step in the medical proceeding. When the arrest is effected, the reproduction of the movements of life to their customary order and activity, by suitable stimulation, is the next; and it is mainly important. The proceeding is thus of a double character: its act is force throughout; not force against nature, but against the action of the cause which subverts the order of nature. The mode of execution varies according to circumstances, viz. quantity of momentum in the diseased act; nature and constitution of the part upon which the act is manifested; condition and habit of the individual contingent at the time, or constitutional. The cause of endemic fever seems to be directed to parts of comparatively gross structure; the product is visible and gross; the means of remedy strong, as corresponding with the condition of the disease. The cause of contagious fever, in so far as respects the contagious act, is directed to parts of extreme subtilty, presumptively the organ of invisible exhalation, which is diffused through the whole of the cutaneous expansion, exterior and interior. The cutaneous expan-

sions seem thus to be the direct seat of the disease; and, in correspondence with this opinion, remedies, in order to be effectual, are directed to be applied to these expansions in various ways and manners. The cure of contagious fever may thus be said to be laid on a basis of theory; experience proves decidedly that, so laid, it is laid upon a basis of fact.

The remedies employed for the cure of contagious fever are of the same kind as those employed for the cure of the endemic; they are modified in application according to the circumstances of the case. Abstraction of blood, which, but a few years since, was viewed with abhorrence, even branded with the epithet of murder, is now considered as the main engine of successful treatment. The remedy was in a manner interdicted at the beginning of the war 1793. I then employed it only rarely; that is, under the pressure of symptoms of extraordinary violence. In the beginning of the year 1796, chance gave me the opportunity of observing that, if it was not so necessary, it was not less safe in fevers of contagious origin, than in those which are distinctly endemic. Since that period I have employed it without fear of doing harm, generally with benefit; at least, with such benefit as to render the disease tractable to other remedies. Emetics have been employed by almost all practitioners at the early stages of contagious fever. They are

of great value; judiciously managed, they often cut off the disease in its beginnings. I prefer emetics of severe operation, such as occasion sickness of long continuance. Purgatives of brisk operation, viz. jalap with calomel, emetic tartar or James's powder, and a small quantity of opium, had singular good effects in diminishing violence and danger, where the symptoms indicate mesenteric congestions, or where the disease is accompanied with intestinal torpor or irregular action in the bowels. Blisters applied to the temples, nape of the neck, and extended down the spine to the interval between the shoulders, are frequently employed at the earlier stages of this disease; they are employed with a marked good effect. Warm fomentations to the feet and legs, scrubbing of the skin with soap and brushes, warm bathing, followed by cold affusion, &c. often arrest the disease. Gestation in the open air, continued for a length of time, was a prescription of necessity, oftener than design; but it was mainly conducive, where employed, in confirming the health that was restored by the judicious and prompt application of the means now mentioned. The contagious action of the disease, I have reason to think, may be extinguished by the prompt and effectual application of the means stated; but, as complications arise not unfrequently during the course, especially at late periods, considerable modifica-

tion is required to meet the circumstances of the case: the principal will be noticed in the details which follow.

SECTION II.

Outline of the Rule to be observed in applying Remedies to Condition.

A. In the first or more simple form of contagious fever described under the letter A. page 167; especially as it appears among soldiers in crowded barracks or crowded transport ships, and as distinguished by prominent marks of diseased action on the surface of the first passages, an emetic of severe operation, viz. tartarized antimony, sometimes antimony and ipecacuanha combined, preceded by camomile, or common tea with a few grains of salt of wormwood or tartar, dissolved in it, is the remedy which I usually first prescribe. This form of emetic sometimes acts upon the bowels to some extent; but as that is not certain, and rarely sufficient, calomel with jalap and James's powder, or tartarized antimony, sometimes with the addition of a few drops of laudanum, was ordinarily directed to be given after the operation of the emetic was over. The feet were put into warm water, sometimes the feet and legs

were fomented with flannels wrung out of hot water, as soon as the patient was disposed in bed; blisters were applied to the forehead, temples, and nape of the neck; warm tea, rice water, or other diluent liquid, with a few grains of an alkaline salt dissolved in it, was given for drink. This mode of proceeding, as easily executed, was commonly applied to the military. Where it was applied within twelve or twenty-four hours from the time of formal attack; and more certainly still, where it was applied under the indisposition which frequently precedes the attack, it rarely failed to cut short the course of the disease so effectually that the soldier was generally in a condition to return to his duty in seven or eight days, in the full vigour of health. If the disease had been of two or three days continuance, or more, before it was submitted to treatment, the patient was immersed in a warm bath, the hair was cut short, all impurities were removed from the skin, by scrubbing with brushes and soap, and a vein was opened in the arm while the body was under immersion. The condition was changed by this discipline; and when sensibility to impression was raised by it, to a certain point of acuteness, cold water was poured upon the head, shoulders, &c. by means of a bucket, watering-pan, or sponge, according to the temperature of the water and circumstances of the subject. The patient was then removed from

the bath, wiped dry, and laid in bed ; an emetic was administered immediately ; and, after the operation of the emetic was over, an active purgative was given, combined with means which have a tendency to act upon the skin, viz. alkalized infusion of senna, with a portion of acetated water of ammonia ; or jalap, with calomel and James's powder. Blisters were applied to the forehead, temples, and neck ; between the shoulders ; and, in short, contiguous to every part where there was intensity of pain, or mark of oppression. The warm and cold bathing were repeated in alternation ; the bed and body linen were changed frequently, &c. The means stated, if properly applied, are generally sufficient to arrest the disease, at least to put things into such train that a favourable termination may be expected at the seventh day, or first critical period. The termination is sometimes, not perhaps generally, marked by sweat and hypostatic urine. The febrile excitement subsides at a given period ; the action of the system resumes its customary healthy course ; or, a new series of diseased movement ensues, which proceeds, under varied appearance, to issue at an uncertain time, and after an uncertain manner.

B. The cure of the preceding form of contagious fever moves upon a comparatively simple base ; and, if the means be judiciously applied, they rarely fail of attaining the desired

end. The cure of the present is difficult, only assured by correct discrimination of condition, and great decision in the application of remedies. The disease is not only concentrated in force, but complicated in form. It sometimes presents itself with appearances of violent, irregular, vascular excitement, and local determinations which threaten convulsion and apoplexy, suffocation or engorgement of internal organs—lungs, liver, or spleen ; sometimes with a strong, or what may be called a concentrated general action, thickened and constricted skin, ardent as a live coal ; a condition, which threatens to subside by internal congestion, or to explode by local external gangrene of varied form, viz. petechiæ, streaks of ecchymosis, or extensive and deep blacknesses. The basis of the cure is common ; the means are similar as in the preceding ; the application is modified by circumstances. If a person, labouring under this form of the disease in either of its conditions, be submitted to treatment within twenty-four hours from the time of the attack, abstraction of blood is evidently the first step in the physician's course. When a certain quantity of blood, only measurable by the physician as superintending the process, has been abstracted from the arm, it is advisable that the patient be stripped naked and immersed in a warm bath of moderate temperature, the immersion continued for fifteen or twenty minutes, the skin

strongly scrubbed with brushes and soap while under immersion. At the expiration of twenty minutes, the condition is to be examined with care; and, if it be then found that the mode of action has not changed, that is, if the movement has not become general and equal, it will be advisable to re-open the vein, and to allow blood to flow, while the patient remains in the bath, until the object in view be attained; that is, until the circulation be in some manner equalized. When that is done, cold water is to be affused copiously upon the head and shoulders, while the lower extremities remain in the warm bath. The course of the disease will, in most cases, be suspended, if not perfectly arrested by the effect of the proceedings now recommended; and when that is done, the body, being removed from the bath, is to be wiped dry, and laid in bed; blisters, as means preventive of return, are to be applied to the head, neck, back, or sides, according to the predominance of the local symptoms. Friction with warm oil will be useful; emetics and purgatives promise the same benefit here after the case is simplified, as in the preceding. A bolus of camphire, nitre, tartarized antimony and snake-root, with half a grain of opium, and two or three grains of calomel, given every five or six hours, with plentiful dilution, frequent ablution, and frequent change of bed and body linen, conduce, if the course of the disease be not totally ar-

rested, to maintain the movements in an equal tenor until the febrile circle be completed, when healthy action may be expected to re-appear. The outline of practice now suggested, varied according to circumstances, applies to the cure of the disease in all its conditions, whether as preternaturally excited, or as constructed through excess of force.

C. The mode of conducting the cure of contagious fever, as manifested under the predominance of the gangrenous temperament, varies considerably according to the degree and condition of the act and manner of accession, viz. slow and gradual, or sudden and abrupt.—In the first, which is often connected with something peculiar in the constitution of the atmosphere, or abode of the patient prior to the actual attack, it is advisable to immerse the body in a warm bath, of rather high temperature, to cut off the hair, to scrub the body with brushes and soap, to open a vein in the arm, and to extract blood to such extent as effects some change in the condition of the circulation. When the signs of that are evident, the patient is to be raised up, the body copiously affused with cold water, salt water in preference, or water in which a certain portion of salt is dissolved. He is then to be removed from the bath, laid on a couch, wiped dry with linen towels, afterwards rubbed with flannels heated at the fire, with camphorated oil and ammonia,

or rectified oil of turpentine, equipped with suitable clothing, and laid in bed in a warm and well-ventilated apartment. It is generally proper to move the bowels in this case; and I am disposed to believe, though I have not had much practical experience of it, that the purging tincture of aloes and myrrh, with more or less of rectified oil of turpentine, is one of the most efficient forms for that purpose; particularly as followed by plentiful dilution with snake-root or saffron tea. The character of the disease may be expected to be changed in most cases by the proceeding now recommended, if it be applied under a just discrimination of circumstances. Camphire, nitre, and snake-root, with acetated water of ammonia, frequent ablutions with cold salt water, vinegar and water, even salt and vinegar, drinks acidulated with the mineral acids, lemons, chrystals of tartar, &c. are sufficient, for the most part, to maintain the course in forward progress, until the termination of the febrile circle, when crisis, or change to another form, may be expected to take place.

The gangrenous disposition is often induced, in the second case, by artificial circumstances, viz. in highly infected, crowded, and ill-ventilated hospitals. In such, it often appears among patients in the relapse or secondary course; occasionally among nurses and orderlies in the primary, especially among those who

are advanced in years, and who rarely breathe in any other air, except that of the sick ward. The invasion is then often sudden, as if the person were stunned by a blow, the mode sometimes apoplectic, sometimes suffocative, or indicative of oppression in the more important internal organs—lungs, liver, or spleen; sometimes gangrenous, expressed as such on the peritoneal coat of the intestines, or on the extremities. The mode of cure is difficult. I consider the first step in the proceeding to be immersion in a warm bath, of rather high temperature, the effect augmented by the addition of mustard seed, ammonia, or *Eau de Cologne*, frictions with brushes and soap, abstraction of blood from the arm while the body is under immersion, the orifice in the vein free, not large, the stream intercepted at intervals, in the course of its flowing, with a view to diminish the chances of fainting, and to enable the physician to estimate, by safe experiment, the probable issue of the effect. The purpose in view, which is excitement and equalized circulation, will be materially promoted by the exhibition of internal cordial, and the aspersion of the face and breast with cold water, while the blood flows from the arm. When the circulation is animated and appears to be equalized, cold water is to be poured upon the head and shoulders, by means of a watering-pan or large sponge, the body wiped dry;

and, after it is dry, rubbed for some time with flannels heated at the fire, even with camphorated oil and rectified oil of turpentine. When these processes are finished, the patient, provided with well aired linen, is to be laid in a warm and clean bed, in a well-ventilated apartment. The character of the disease may be expected to be changed by this form of proceeding, if it be conducted in a proper manner; and, if the character of the action, induced by this form of discipline alluded to, be progressive, its progressive course may be expected to be maintained by the occasional use of stimulating purgatives, particularly by the purging tincture of myrrh and aloes, with more or less of rectified oil of turpentine, preceded by five or six grains of calomel. Blisters, plentiful dilution with snake-root tea, saffron tea, or other stimulating and agreeable beverage; and a bolus of camphire, nitre, snake-root, ammonia, and James's powder have appeared to myself to conduce materially to the purpose in view. Frequent change of linen, frequent ablution with warm and cold water alternated, friction of the skin with stimulating oils, and gestation in the open air, in a convenient vehicle are necessary to maintain the ground gained by the first proceeding.

D. I have cursorily mentioned the principal remedies, and given, at the same time, an outline of the circumstances by which their applica-

tion is to be directed in what may be termed the first course, or first septenary period of contagious fever. The medical art may then be termed a science ; and, as a science, possessed of engines of power which command effect. The certainty of science is in a manner lost in the periods which follow. We cannot then estimate with precision the power of the vital condition ; that of the organic is often obscure ; and, even if it be known, the morbid act is so rooted that it frequently lies beyond the reach of change, from the effect of any means that we think ourselves warranted to employ.—Febrile movements are influenced by periods of revolution, connected with the general laws which influence revolution in the sublunary system. Odd days, when types are simplified, are eminent ; the recurrence of sevenths, during the duration of a protracted disease, is memorable among the days of crisis. The contagious fever is subject to the power of the general law ; its termination is, indeed, rarely distinguished by sensible evacuation, viz. sweat and hypostatic urine ; the influence of period is notwithstanding perceivable on its course. It sometimes happens that the first septenary course of the disease terminates in remission, resembling crisis. A second course commences, sometimes not until after an interval of some days ; sometimes, instead of crisis, or suspension of febrile action at a critical period, a new accession,

marked by a change in the nature of the symptoms, supervenes upon the extremity of the first course. It marks a new accession, fixes date for a new calculation, and thus brings the doctrine of critical days under a rule of easy explanation.

1. I shall now consider the secondary course of contagious fever, whether it commence in one, two, or three days after cessation of the first; or supervene, so as to be mixed with the extremity of the first, as assuming a regular, active, and open form. Little medicinal aid is then required. Attentive nursing, diluting liquids, pure air, frequent change of linen, occasional fomentation of the extremities with flannels wrung out of hot water, ablution of the body with warm or cold water, according to the circumstances of the case, are, for the most part, sufficient to maintain the course in progress until signs of termination manifest themselves: — that generally happens at a noted critical period. But if, instead of an open course of regular progression, symptoms occur which threaten convulsion or other violence, the patient is to be immersed in a warm bath, a vein opened in the arm and blood abstracted, while he is immersed, in quantity sufficient to make impression on the action then existing. The head is moreover to be shaved, covered with cloths wet with vinegar and salt, blisters applied to the back part of it, to the spine,

continued from the nape of the neck to the interval between the shoulders. Camphire, nitre, James's powder with calomel and opium in bolus, is often given with advantage in this condition; it is here that cobweb appears to be particularly serviceable, more serviceable than opium.

2. Another condition, connected with contagious fever in its secondary course, is characterized by a small and frequent pulse, muttering or faltering speech, confused intellect, extreme weakness or inability. It is essential to ascertain, in this case, in so far as is possible, whether the existing symptoms are the sequel of highly excited action, or if they are connected with contingent local oppression on the organ of sense and motion. In the first, it is almost always proper to cut off the hair, to shave the head, perhaps to apply blisters to the scalp, and other parts of the body, to give internal cordials to the extent of impressing the system perceptibly, not of exciting action inordinately. Camphire, snake-root, with more or less of the acetated water of ammonia, or James's powder; calomel in small doses; fomentations of the extremities with flannels wrung out of hot water; immersion in the warm bath; and, after removal from the bath, friction of the body with warm oil, volatile liniment, &c. aspersion of the surface with cold salt water, with *Eau de Cologne*; frequent change of bed

and body linen ; pure air, warm apartments, gestation in the open air, in a convenient vehicle, comprize the principal of the curative means ; the application to be varied in mode and degree, according to the circumstances of the case. In the second, evacuation is necessary, even abstraction of blood by cupping, or by the lancet ; the operation to be performed while the body is immersed in a warm bath. Blisters are to be applied to every open surface about the head and upper part of the spine. Calomel, with some grains of James's powder, and a proper quantity of powder of jalap, is to be given as a purgative, followed by plentiful dilution, long continued fomentation of the extremities with flannels wrung out of hot water ; in short, by evacuation, combined with stimulation in such manner that, while oppression is relieved by the one, recurrence is prevented by the other, as an effect of counteraction.

3. The action of the febrile cause is sometimes finally judged, sometimes only suspended at a critical day, viz. third, fifth, or seventh. It returns, sometimes in a form of violence threatening apoplexy, suffocation, or gangrenous explosions, if they may be so called, upon the lungs, liver, spleen, or extremities ; sometimes in a form which, after accession, is marked by a slow and gradual tendency to stagnation ; a regression to the centre without

febrile tumult. In the first, which threatens apoplexy or other form of venous stagnation, immersion in the warm bath is the remedy first in time. When the surface is warmed by the bath, abstraction of blood next presents itself, the quantity measured by experience made under the eye and touch of the physician. In aid of the effect of these means, which are primary and principal, it will be proper to cut off the hair, if it has not been already done; even to shave the scalp, and to wash it with Cayenne vinegar: to apply blisters to the nape of the neck, temples, and spine; to administer purgatives of active operation, followed by plentiful dilution with agreeable diffusible beverage. Camphire, nitre, snake-root, calomel and James's powder, with opium in greater or smaller proportion, made into bolus, and given at intervals of five or six hours, may be considered as means of some value for maintaining, in a regular train of progression, the favourable course which had been moved by the first steps of the proceeding. Gestation in the open air is here a remedy of great importance. In the second, where the tendency of the course to stagnation is slow and gradual, without tumult or mark of prominent local oppression, immersion in a warm bath, the stimulating property of the bath, augmented by some phials of *Eau de Cologne*, or other fragrant material; abstraction of blood in small quantity, and at

short intervals, as means of producing change in the blood's motion and condition; friction of the skin by flannels heated at the fire; by stimulating liniments—vinegar and salt; aspersion with water, *Eau de Cologne*, lavender water, &c. internal cordials—wine, brandy, or other spirit, given in quantity sufficient to impress the system with the lowest observable degree of artificial action, are the means of principal trust; especially as aided by occasional gestation in the open air in a convenient vehicle, and the influence of the warm air of a dry and well-ventilated apartment.

E. Besides variety in the modes of contagious fever as manifested on the system generally, at least on a series of structure generally extended through the system, the disease occurs not unfrequently with marks of action so prominently manifested upon particular organs, or limited series of parts, as to obtain a name of local distinction, and to require some modification of the means that are ordinarily applied for the cure of the general disease.

1. The symptoms of contagious fever are sometimes especially prominent on what may be called the gastric system, viz. the surface of the alimentary canal. In such case, the exhibition of an emetic, at the early stage, particularly where there is evidence of increased secretion from the mucous membrane, may be considered as the first remedy in time. Where the

emetic acts effectively, or rather severely, the result is often decisive of cure, particularly as followed by a brisk purgative, viz. calomel with jalap and James's powder, or emetic tartar, ablution with cold water, and exercise in open air. Where the tongue is preternaturally red at the commencement of the disease, whether rough, or smooth and shining, emetics are less proper or less effectual. Camphorated mixture, with acetated water of ammonia, and a small portion of vitriolated zinc, abstraction of blood in moderate quantity, immersion in the warm bath, and, after immersion, affusion of cold water on the surface, blisters to the epigastrium, are then the suitable means of remedy. If the tongue be foul at the advanced stage, covered with mucous exudation, whether moist or dry, emetics have appeared to the author to be useful. If the tongue be dry, red, smooth, and glossy; the camphorated mixture with acetated water of ammonia, and a certain proportion of vitriolated zinc is serviceable; sometimes a dilute solution of sugar of lead may be given with advantage: frequent immersion in the warm bath, abstraction of blood in small quantity, friction of the body with warm and stimulating oils, affusion of cold water on the surface, with such internal remedy as has a tendency to maintain more or less of perspiration, may be reasonably supposed to produce beneficial effects. If the hypochondria be in-

flated, hard and tense; or if there be tympanitic distension through the whole of the abdomen, accompanied with purging of watery stools, &c. the purging tincture of aloes and myrrh, with a certain portion of rectified oil of turpentine, especially as joined with abstraction of blood in small quantity, warm bathing, warm fomentations, frictions of the abdomen with camphorated oil and oil of turpentine, *Eau de Cologne*, or other aromatic embrocation, has appeared to myself, at least, to be a remedy of power in every untoward condition of disease.

2. In the dysenteric form of contagious fever which occurs, sometimes as primary, especially in damp and foggy weather in camp, or bad quarters; frequently as secondary, in crowded and damp military hospitals; the first view, in the proceedings of cure, is necessarily and reasonably directed to produce an equalization of the circulation by immersion in a warm bath of rather high temperature; by abstraction of blood to a given extent, whether by the lancet, by cupping or by leeches; by blisters applied to the whole of the abdomen: by emetics of ipecacuanha, followed by purgatives; viz. calomel, rhubarb and charcoal, with a certain portion of James's Powder, or emetic tartar, and sometimes with a small portion of opium. These means, as judiciously applied to circumstances, rarely fail in arresting the diseased action, or in giving the action such a tendency

as leads to a favourable issue. In the more advanced stages, or in the condition called chronic, the means of remedy vary extremely. Army physicians rarely have it in their power to apply what is proper, either in diet or regimen; and hence the mortality, in the dysenteric column of military hospital returns, is almost always enormously high.

3. Contagious fever appears not unfrequently, at certain seasons of the year particularly, and in certain localities, with a marked prominence of action on the organs contained in the thoracic cavity. Besides abstraction of blood by the lancet, cupping or leeches, immersion in a warm bath, for a considerable length of time, frictions of the skin with brushes and soap, while the body is immersed; emetics, antimonials in preference, diaphoretics; and, in an especial manner, blisters to every part about the thorax are remedies of principal reliance.

4. The main force of the contagious fever is directed on many occasions to the cerebral organ, manifested by pain, delirium, irritation, threatening convulsion; or by stupor and oppression resembling apoplexy. Abstraction of blood by a large orifice is here primary among the remedies. The effect of it will be aided by immersion in warm water, of varied temperature according to circumstances. In addition to abstraction of blood and immersion in the warm bath, the hair ought to be cut off, the

head shaved, cold water poured upon the bare scalp, from a height, and by a very small stream, in a manner by drops; or dashed suddenly with force and in quantity. Blisters, applied to every part near the head—the temples, neck, &c.; purgatives of brisk operation, viz. jalap with calomel and James's Powder, or emetic tartar, promise to be useful, &c.

The forms of local action now adverted to fluctuate, or interchange with one another more readily in the contagious fever than in that which arises from an endemic source. The diseased act sometimes terminates by suppuration, adhesion or effusion; but upon the whole much seldomer than where the act is in no degree marred by the presence of contagious influence, acting by constriction or otherwise on the ordinary channels of circulation. It is regarded as an axiom in animal economy, that two forms of action do not exist in the habit at the same time. The rule is not perhaps always correctly understood. Two actions of a different kind do not, it is admitted, exist in the same series of parts at one and the same time; two actions of a different kind may, and do in fact, exist at the same time on different series, though not with an equal degree of force on both. The action is more prominent on one series than on another; and, in this manner, the activity of the contagious process appears to be diminished, almost dormant, where the action of the common,

or complicating fever is violent; it again revives, when the other ceases or declines, so as to be sometimes conspicuous under an apparent progress to convalescence from the more prominent, or dangerous disease.

I have endeavoured to give an outline of the history of the more prominent of the conditions that are connected with the action of the cause of contagious fever, primarily or contingently, stating as explicitly, and in as few words as I can, the means which have appeared to myself to be most applicable to the cure of the varying conditions. The distinctions which I have made of these different conditions will probably be deemed embarrassing. They appear to myself to exist, and I have endeavoured to point out the marks of their existence, in so far as I am able to discriminate, in the hope that others may be induced to look, to observe and judge from their own observations; for as remedies, in order to be effectual, must be applied to condition; so it is only from the accuracy of the observation which is employed to sieze the leading feature of the condition, that the success of any given remedy can be calculated with confidence. I am not certain, in how far the view which I have endeavoured to give of contagious fever, and the means I have recommended for the cure of it, may agree or disagree with the practice of the present times. I have no desire, and no pretensions to be thought a

leader. I simply relate what I have seen, and what I have done—subjoining, with all humility, the reason for which I do it. I consider the cure of fever as a double process throughout; viz. as arrest of diseased action, of whatever form it may be, by the means that are best calculated to effect arrest; and, as reproduction of the action of health by others; that is, by those which are nearly allied with the causes which stimulate to a renewal of the healthy course suspended, or impeded by the active influence of the cause of disease. These means are often directly opposite in their nature to each other. If the cure of fever be trusted solely to such as act upon one base only, the issue is left open to many chances of disappointment. The course is protracted, in one case, by what diminishes the force, but does not subvert the base of what is wrong: it is precipitated to destruction, in another, by what adds to the force of the act which exists. By a judicious combination of the two, the purpose is generally effected safely and speedily. The course of the febrile act is progressive—sometimes regularly and calmly, sometimes irregularly and tumultuously: it is also regressive, verging to stagnation; sometimes slowly and calmly; sometimes suddenly and abruptly. The expression of the act is opposite in appearance in the cases stated; the means preparatory of cure are analagous; those effective of cure

are often the same modified in application according to circumstances. The impulse of the blood's circulation may be safely considered as the engine which moves all the organic actions in the animal system. From the universality of its influence, and the command which we have over its application by means of abstraction, the action of abstraction, while the most general is the most powerful instrument of remedy which the medical art possesses in almost all forms of general disease. The remedy is of perfect safety, as applied with care and judgment; and, from confidence in its safety and power, it is generally employed by the author in almost all forms of fever; either as direct means of arresting the unnatural action which constitutes the disease; as collateral or auxiliary means which, moderating force, bring the disease under the command of other powers of remedy; or, finally, as initiative of movement in channels that are obstructed by congestion—a practice assumed on the mechanical principle of opening an outlet to the contents of a stagnant canal.

The general remedies which are applied to the cure of endemic and contagious fever are the same in themselves; they require to be modified and measured in application, so as to meet correctly the differing circumstances of the case. The act of the endemic, as manifested in the channels of grosser circulation,

disturbance in which is not long compatible with life, tends rapidly to issue salutary or fatal, temporary or permanent. The act moves for the most part with force and velocity; consequently a proportionally great quantity of abstractive power is rendered necessary to counteract the artificial momentum of its course. The end is not attained in many cases, particularly in the more concentrated forms of fever that appear among the military in tropical climates, at a less expense than five or six pounds of blood drawn at one time. The cause of contagious fever, as not to be traced by its product in the animal system, must necessarily be disposed to act on channels of extreme minuteness. The act does not disturb the balances of the circulation to great extent; the course of the sup-pose is comparatively slow, the tendencies, as the act of a simple contagious process, little dangerous, and not such as appear to demand, generally and absolutely, the abstraction of blood for their arrest. But though this remedy be not absolutely necessary for the cure of the simpler forms of the disease, it is notwithstanding safe and frequently useful as auxiliary; it is indispensable in those that are complicated; and it is ascertained, from abundant experience, that it may be carried to extent in such, without more risk to life, or more apprehension on the score of debility, than if the disease were actually such as is called endemic. It is

reasonable to suppose, and it is obvious to observation, that the febrile act has a local seat among the tissues of animal structure ; that is, it acts more prominently on one series of parts than on another. If this be admitted, it follows by direct inference that the remedy, which is applied with a view to subvert the diseased act, only acts effectually as it is applied to the actual seat of the disease. A close observation of conditions points to the skin as the seat of contagious fever. The effect of remedies confirms the inferences which might be supposed to arise from observation, for the powers which act on the cutaneous expansions, internally or externally, being in fact those only which are effective in subverting the contagious process. In this manner emetics, which act on the lining of the alimentary canal, blisters which are applied to the exterior skin, ablution and friction of the skin with brushes, soap and warm water, immersion in a steam bath, in baths of warm water of high temperature, affusion of cold water on the surface, the impulses of pure air, and particularly the impulse which is given by gestation in open air in a convenient vehicle, are the most efficacious remedies that have yet been applied to this form of disease. They are to be varied and adapted to circumstances, aided occasionally in their operation by abstraction of blood, or other means that tend to render the habit susceptible ; but, by keeping the

base in view, the effect, as it appears to myself, may be calculated with considerable certainty in almost all cases of contagious fever. The view is an important one, and not difficult of comprehension. The principle is illustrated not by what has been formally done to prove it, but by what has been done in contravention of it, viz. by amassing crowds of sick into ill ventilated hospitals.

CHAPTER X.

Convalescence, Relapse, &c.

THE stage of convalescence, or progress towards recovery, is a very important one ; but it is one which rarely obtains a just share of attention in military service, even in the medical establishments of the civil part of the community. The subjects of contagious fever, as removed from the ranks of their respective corps, are ordinarily collected together, in order to be crowded into large apartments, called general hospitals, such as chance presents in the scene of actual war. They are thus, for the most part, thrown together at these depots, crowded in undue proportion, and, while crowded, seldom classed in different wards according to difference of condition. The matter of contagion, as generated under the progress of the disease, and multiplied in a compound ratio by the aggregation of subjects, exists in quantity within the walls of the hospitals. It is ready to act, and ordinarily does act where subjects

become susceptible of its impression; that is, when the primary circle of the febrile movement finishes its course. Hence relapse, or more properly speaking, perhaps, a new disease, occurs, and continues to occur in a series of successions, until life be destroyed, or until susceptibility of febrile impression be annulled. An event which sometimes takes place, through the operation of causes that are not easily comprehended. The mode of conducting discipline, among those who are convalescent from contagious fever, important in itself as relative to the science of medicine, is so nearly connected with the subject of national prosperity, in peace or war, as strongly to solicit the attention of the higher powers of the State to a proper adjustment of its conditions. The subject is somewhat complex; and, in order that the practices, necessary to be pursued for the attainment of the effective purpose, be brought under the guidance of a comprehensible principle, it is proper to state, prior to farther proceeding, a few points of fact relative to contagion; viz. the extent of its sphere of action, and the means which augment or diminish its activity.

Contagious fever may be considered under two views; viz. as a disease, arising apparently from a common endemic cause, assuming a contagious process in the course of its action through the influence of contingencies; or, as a disease, contagious in its origin, generative of its kind

in its evolution, and diffusive of its effect in productive activity to a given distance from the source. The cause, through which a common disease assumes the contagious process is obvious in many cases; viz. the result of accumulating a multitude of persons, who are in particular circumstances of indisposition, most commonly fever of the gastric form, into damp and ill-ventilated quarters. This occurs frequently among military sick in protracted campaigns; it also occurs among manufacturers, or other classes who, under exigence, are thrown into damp cellars, or other ill-ventilated places, in undue proportion. The disease, thus artificial in its origin, is insulated in its sphere, communicated to others only by contact or near approach. It is infectious; and observed to spread its infection with different degrees of difficulty or facility, in different conditions of the atmosphere, some of them obvious, some of them not cognizable. It sometimes ceases to propagate, where the material cause exists in force, and where subjects, which might be thought to be susceptible of its impressions, are numerous. It is thus suspended inexplicably, as if there were secret and inscrutable causes operating against the legitimate or customary effect. It sometimes spreads with facility, and with a rapidity scarcely to be followed in its course by the most careful observation; giving an idea that it is acted on by in-

visible causes, which connect subject and agent by something like electric influence.

But, whether the contagious process arise contingently in a disease of endemic origin from a combination of artificial causes, or be excited in particular channels of the circulation by the engraftment of a foreign material, it produces a new act, and, with that act, a new product which, as invisible to the eye, and impalpable to the touch, must be supposed to proceed from the minutest series of secreting organs, viz. the invisible exhalants of the skin. The exhalation, as invisible, is necessarily of great tenuity: it is notwithstanding subtile, as it may be, a material of character, possessed of viscosity, so as to adhere to many of the substances upon which it casually strikes, after emission from the channels where it receives its form. It is capable of condensation in what may be comparatively called a state of rest; it is prevented from condensation by such agitation of the atmosphere as divides and disperses into a wider circle. It is thus stronger, as more condensed, when collected upon clothes or other substances that have been in contact with the infected subject, than it is as emitted directly from the channels of the living body itself.

The cause of contagious fever, generated in animal bodies in a state of disease, may be supposed to issue from the surface at all its points.

It is not ascertained correctly to what distance the material extends from the source in a state of infectious activity. The distance is not the same in every case; differing as may be reasonably supposed according to the different conditions of the atmosphere—moist or dry—stagnant or agitated; or according to different bearings between subject and agent, viz. windward or leeward. There is reason to believe that the atmosphere of an infected individual, who is placed singly in a spacious and well ventilated apartment, would not be injurious to persons, who are not susceptible of the impressions of contagion beyond a common degree of susceptibility, at a distance of three or four feet from the source; there is reason to believe that no part of the same apartment would be safe to the same persons, if it were filled with sick, crowded in the manner that military hospitals are often crowded. The interior of such apartment, however spacious, I should consider as contaminated; but I may add, that the contamination does not extend, so as to be mixed with external air, unless perhaps, as issuing in a stream at the immediate aperture of a door or window.

The law of progress of febrile contagion from the diseased body, is upon the whole simple, its course frequently illustrated by what happens in ships at sea, when they are filled with sickly troops; and, among others, clearly ex-

emplified in the ship *John*, in her passage to St. Domingo in the year 1796, as mentioned in a preceding part of this work. The *John* was filled with sick; the character of the sickness was contagious, the degree of the contagion in the highest state of concentration. The cabin was occupied by officers—the steerage by sailors, the crew of the ship. None of the officers, who confined themselves to the after part of the ship-cabin and quarter deck; even none of the sailors, who were separated from the sick only by a partition of board, were infected by the disease: no one who entered into the apartment of the sick, even when the greater part of the sick were on deck, escaped without impression of something unpleasant, which terminated in formal fever or not, according to neglect or employment of active means of prevention. The ship was at sea, the course before the wind; the sick, placed on the forecastle and waist, were a little disturbed by the sailors: they communicated no infection to those who were to windward of them; the forecastle, or leeward was less safe; but it was only visited by the medical attendants. To what happened in the ship *John*, I may add, that few, or any of the out servants of the hospitals with which I have been connected in the course of my official duties, have suffered from contagious fever; few of the nurses or orderlies have escaped.

The points of fact stated, though not the

hundredth part of what might be adduced, are sufficient to prove that the fever in question is contagious, and that the contagion does not extend far, in a state of activity, from the living body by which it is generated, unless as deposited on clothing or other substance, it be conveyed to a distance through the intervention of that medium. The causes which facilitate the propagation are numerous; some of them obvious; others obscure. Besides certain unappreciable qualities in the atmosphere, under the existence of which the disease spreads with rapidity, or propagates with difficulty even when the cause is directly applied; the obvious, or sensible conditions of the atmospheric circle, in which the subject lives, have more or less of visible influence on the manner and activity of dissemination. Heat and cold, simply as heat and cold, do not appear to have much effect, either in generating or in propagating contagious fever. The disease existed, even spread rapidly in the British army in Holland, in the latter end of the year 1794, and beginning of 1795, when the cold was so intense that many persons were actually frozen to death. It has been generated, and even become virulent, consistently with my own knowledge, in the lower decks of ships employed for the transport of troops during navigation in the seas of a tropical climate. The influence of heat and cold is thus only relative; that is, only operative as it

acts upon balance, or effects that form of movement in the atmosphere, which is called ventilation. Dryness and moisture are more obviously connected with propagation or non propagation of the contagion of fever than heat or cold. The propagation is comparatively rapid among a given body of men, collected in barracks or transport ships, in damp, foggy and still weather, whether damp and warm, or damp and cold; it is comparatively slow in weather that is clear, dry and windy, whether the temperature be high or low. The condition of the atmosphere, as agitated or still, seems to be of all other conditions that which most influences, if not the generation or non generation, at least the propagation or non propagation of the contagious material; and hence, as the continual agitation of the air is the cause which principally prevents such concentration of the material as gives it the power of propagating itself actively, the means of assuring a perfect and continual ventilation for hospitals, which are the receptacles of febrile sick, must necessarily be considered as an object of primary importance.

It does not appear, in looking at this subject with the eye of science, that the principle, by which ventilation is assured in the interior of dwellings, has been well understood by the architects of military hospitals in Great Britain; or that the value of ventilation has been fully

comprehended by those who sketched the plan of those establishments. It is defective in the best; and, in some, it appears to be literally precluded; the means of ventilation being so disposed as to act on the higher atmosphere of the ward only—not to touch the part in which the sick repose. If there be defect in the means of ventilation where houses are built expressly for the reception of sick, it would be vain to expect what is adequate in common houses that are applied, in exigence, to that purpose. Churches, unoccupied palaces, or other grand mansions, are frequently filled with sick in the scenes of actual war; and, as not fit for the purpose of hospitals by form of construction, they are liable, when crowded with subjects ill of contagious fever, to be deeply contaminated with infection, so as to be, in many cases, more like charnel houses than hospitals. Barns, which in Holland and Germany are generally spacious and freely ventilated, are occupied on many, or on most occasions, by the sick of the corps that are near them. They are wholesome hospitals comparatively; and apparently wholesome in proportion as they are open; that is, assimilate to the characters of a shed. As ventilation is the means by which purity of air is preserved in hospitals; and, as purity of air is indispensable to a fortunate recovery from the disease in question, it is important to consider, and to endeavour to

ascertain the means by which that can be best attained. Ventilation must be understood, in the proper medical sense of the word, to consist in the constant and gentle undulation of the interior atmosphere of the apartment, moved into activity by free and direct communication with the interior. The ventilation here in view is different from that form of winnowing, which is produced by wind-sails, port-holes, slits and narrow windows—the effects of which may be sometimes injurious; it is also different from exhalation of the steams of the interior through openings near the cieling—the effect of which is insignificant as means of ventilation. In order that ventilation be effectual of the purpose intended, it is necessary that the windows, on the opposite sides of the ward, be brought down to the level of the floor in the manner of Venetian windows; and, that no dangers may thereby arise from exposure to direct currents of air, it is proper that the windows be provided with jalousies, so as to give those who are within the power of regulating the movement of the interior air, in what manner they feel to be agreeable, or judge to be. Ventilation, or the ingress and egress of the common atmosphere will be sufficiently secured by the means proposed; and, in warm and dry weather, ventilation will be sufficient security against the accumulation of contagion. In cold, damp and foggy weather, the free admission of external air might probably be inju-

rious by its impressions : air of that description is moreover not calculated to absorb, or dissipate the floating contagions. In this case, the strong heat of fire in open fire stoves, so placed as to diffuse its influence into the lower layer of the atmosphere has appeared to myself to be the only substitute for defect of common ventilation, and the only sure means of rectifying the air that is vitiated by emanation from the bodies of living men. Heat, as acting on the skin, probably operates favourably on the conditions of contagious fever ; it evidently operates favourably, as exciting and maintaining circulation of air within the apartment. I here take leave to mention the circumstance that first directed my attention to it. The wards in the barrack in Westmoreland Fort, on Spike Island, which were allotted to the reception of the sick of the St. Domingo expedition, and which were crowded to the most extreme degree of crowding, were also in some degree cooking places ; that is, employed for the preparation of the lighter parts of diet. A large fire was necessary ; and a long grate, being filled with coals, threw out a great heat—sufficient to roast a surloin of beef. This was the case in the larger wards, where there were from forty to fifty persons stowed on the floor as close as they could lie. Those, who lay within a certain distance of the fire, generally did well, though the symptoms of the disease were often violent ; those, who were

near the end where there was no fire, died in great numbers, though the symptoms of the disease often appeared to be moderate. The air near the fire was comparatively light—and not offensive; near the remote end, it was heavy, unpleasant, almost insupportable to the transient visitors. The influence of strong heat from fire, in a sick apartment, appeared to be so useful, at least so agreeable in the present case, that large fires were ordered to be made in all the huts and sheds on the outside of the fort which were occupied by the sick. The air in these huts, though filled with sick to overflowing, was not offensive, the progress of contagion was not active; and mortality was comparatively moderate—in fact on the lowest scale. From that, and other more recent experience, I am disposed to consider the action of the heat of fire as most important means of ventilation, mainly conducive in arresting the progress of contagion; the chief trust in fact in damp, foggy and still weather, through which we can expect to preserve the air of hospitals, as fitted with febrile sick, from a dangerous vitiation.—The means of ventilation now suggested, I consider as sufficient to preserve the air of hospital wards in purity, provided the ceiling be of proper height, viz. from fourteen to fifteen feet; the width from twenty-four to twenty-six; a space of six feet allotted to the bed of each patient; and fire so placed that every part of the

ward may be brought under the direct influence of heat. I do not take it upon myself to say what ought to be the size of the wards; but I think it incumbent on me to say, that one third of fever hospitals ought to be unoccupied; so that there be the means of filling and evacuating the wards in rotation; it being frequently observed that recovery is slow in wards that have been long occupied by febrile sick; though actual infection may not exist, that it is ordinarily rapid, for a short time, after a new ward is opened.

The means of assuring the purity of air in fever hospitals have been stated cursorily, in so far as respects construction and allotment of space for the sick individually. The interior equipment of the ward, and the means of keeping it in a state of wholesome purity as points of some importance, deserve also to be considered. Whatever be the form of the bedstead of military hospitals, it is to be regarded as a standing rule that it be not employed a second time, without having been cleaned and purified; that is, scrubbed with a hard brush, warm water and soap, or potash, and dried in the open air; that the bedding be, in every case, clean bedding, of whatever kind it may be; and that no furniture be permitted to remain within the precinct of the ward which is not essentially necessary to the purposes of the sick. It is scarcely necessary to observe that

the mode of cleaning the walls and floors of the sick apartments must vary according to the nature of the material of which these walls and floors consist. On the supposition that they are of board, dry rubbing with a loaded brush, the floor being occasionally sprinkled with pot-ash, may be deemed the most suitable. The walls and corners are moreover to be scrubbed with a hand brush, the bedsteads, with their patients, moved into the middle of the floor, and the heat of strong fire applied by means of a brazier of live coals to the walls, and particularly to the least ventilated corners of the ward. The scrubbing proposed is preferable to washing with water; and, if well done, it may be considered as effectual in removing all adhering pollutions. The washing of the walls and floors with hot quick lime is destructive of contagion for the time: it is not preventive of its reproduction or reaccumulation; and it cannot with convenience, be often repeated. Fumigation with the mineral acids has obtained reputation with many. It may be useful in places that are only moderately infected.—I have reason to think that its effects are insufficient in places that are deeply contaminated; that is, in military hospitals filled with persons ill of fever. The trials which I made, or have seen made of it, were not perhaps well conducted; but, such as they were, they failed of the effect that is usually ascribed to this process.

Ventilation by open doors and windows, by the strong heat of fire, purification of the floors and walls by dry rubbing, and frequent personal ablutions were the means in which I chiefly trusted.

Personal purification, independently of its value in the individual case as a part of medical treatment, is essentially important as diminishing the activity of the progress of general contagion, and, in that view, it requires to be conducted with great exactness. In times not long past, when powder and pipe clay were indispensable articles for the ornament of the military figure, the military sick, at their admission into hospitals, were often incrustated with dirt and over run with vermin; and in such case, there was a necessity, according to my own view of the matter, for the employment of means of purification which, without such condition, some would be disposed to consider as harsh and barbarous. The sick person, being admitted into a receiving room, was there examined; and, the condition being ascertained, orders were sent to prepare a bed in the ward allotted to persons in his condition. The hair was cut short, or the head shaved as the first step in the proceeding. Thus prepared, he was conveyed to the bathing room, immersed in a tub of warm water, scrubbed with a hard brush and soap, the scrubbing continued until the vermin and incrustated dirt were entirely removed.

He was then immersed in a warm bath of clean water, rubbed gently with a softer brush, allowed to remain immersed a longer or shorter time according to circumstance, bled, if the case required blood letting, to such extent as was judged to be safe and proper. When the skin was rendered clean, animated and susceptible by the practices now stated, cold water was poured upon the head and shoulders by means of a bucket or sponge, as seemed most suitable to the case. He was then removed from the bathing vessel, wiped dry with coarse linen towels, occasionally rubbed with flannels heated at the fire, with warm olive oil, or volatile liniment, equipped with the hospital dress, viz. night-cap, shirt, trousers, dressing gown, and slippers, conveyed to the allotted ward, and laid in bed with every requisite care.—This constituted the first process of purification, the bathings were repeated occasionally in the after progress; daily ablutions were never omitted; and after ablution, clean body linnen was deemed indispensable: bed linnen was changed twice a week.

Some circumstances which relate to the sphere of contagion, and some laws which relate to its progress having been glanced at in a superficial manner, I shall now add a few remarks on the management of convalescence, after the disease has been suspended by art, or has appeared to cease according to its own rule. I

consider the subject under two views, viz. one, where the physician is master of his own arrangement, and where he of course commands every thing which is necessary for carrying his views into effect; and one, where he is merely a labourer, with the command of little of what is necessary for giving effect to his labour: the latter is the more usual in military service.

1. If the hospital building consist of various apartments of different sizes, constructed according to a scientific principle, and arranged systematically for the convenient execution of business, the physician may be supposed to possess the means, in so far as relates to accommodation, of conducting convalescence to established health—and with few chances of reverse. It is a primary point, in the interior arrangements of the establishment under consideration, that diseases of one class and character, and as much as possible in the same circumstances of condition, be received into the same ward. If this principle be admitted, it follows, when the febrile course has ceased in any individual case whether the circle be finished according to the rule of its own movement or arrested by the vigorous interference of art that the individual be removed, from his present place, to a place set apart for persons in the first stage of convalescence. As soon as the removal is determined to be proper, he is to be conveyed

to the bathing room, immersed into a warm bath of suitable temperature, scrubbed gently with brushes and soap while under immersion, the immersion continued for half an hour. When removed from the bath, he is to be washed completely with cold water by means of a sponge, rubbed dry with coarse linnen towels, subsequently with flannels heated at the fire, with warm olive oil or stimulating liniment, clothed with well aired and warm clothing, and conveyed with care to the new apartment, such internal refreshment being given to him at the time as may be deemed suitable to his condition. The diet for the wards, set apart for persons in the first stage of convalescence, is considered as no more than the half of the hospital full ration. It is small in quantity, but good in kind, and rendered savoury to the palate by the mode of preparation. One glass of Madeira wine after dinner, half a glass of brandy as a liqueur, or half a pint of porter, according to the taste of the patient, appears to myself to be the highest allowance of liquor that can be useful in a convalescent hospital. The convalescents of the first class are supposed to rise from bed at a stated hour, assisted as their occasions may require, washed, combed, brushed and rubbed with coarse towels, with warm oil, or volatile liniment, and preferably, if expense admit of it, with *Eau de Cologne*, furnished with clean linnen daily, and permitted to walk

about, or repose on the bed in the hospital dress according to their pleasure.

At a certain point of progress, that is, when the strength is so far regained that assistance is not necessary to the performance of personal concerns, the convalescent is to be removed to another ward; viz. a ward probationary of the re-establishment of health. It will here be proper, as in the first step of progress, to carry the convalescent to the bathing room, to immerse him in the warm bath for twenty minutes or more, to pour cold water—sea or artificial salt water, on the head, shoulders, &c. when he rises from the bath; to dry the surface with coarse towels, to rub it with flannels, &c. and to equip him with the clothing which belongs to the probationary ward. The diet for the probationary ward is of the highest hospital scale. It is supposed to be short of the barrack ration by one third, instead of being higher by one third, as was the rule at one time in British military hospitals. The person, who is placed in the wards of probation, is not only permitted, but enjoined to walk out daily and to remain, when the weather permits, a certain length of time in the open air, engaged in exercises of one kind or other, such as have a tendency to bring him back to the activity and vigour of his former life.—There is reason to believe that if this mode of management be adopted, executed punctually, and with just conception of

its importance, the greater number of the sick will be restored to a serviceable state of health within a fortnight from the time of admission; unless where the disease, as of long continuance prior to its being submitted to systematic treatment, had greatly reduced the strength, or essentially injured an important internal organ. Relapse rarely occurs under the discipline described; where it does occur, the same decisive means of treatment may be applied to it, as to the original attack.—Emetics and purgatives, as opportunely administered, often avert an impending relapse.

2. I have stated, cursorily, a mode of proceeding for the management of those who are convalescent from contagious fever,—such as I conceive ought to be followed, and such as I believe might be followed without great expence or inconvenience. I shall now notice the case as it actually is a case where little can be done by the physician.—It happens frequently, particularly during active campaigns, that masses of military sick are collected into large buildings—churches, deserted palaces, or other edifices that, as not erected for the purposes of ordinary dwelling, are defective in the provisions that give comfort to the inmate, even that are necessary to preserve the air in purity where the interior is filled with human beings in a state of disease. The sick are, in this case, often thrown together promiscuously; viz. dis-

eases of different class and character, and similar disease in different stages of progress—from the first beginnings to the final close in death. Besides promiscuous mixture, the accumulation of subject in confined space is often extreme; hence the air, contaminated by breath from the lungs and other emanation from the bodies of the sick, is rendered unfit for the purposes of life:—injurious to the healthy, it fails in maintaining the course of disease in those who are sick. The subject thus dies prematurely in crowded wards,—often without manifesting signs of strong, at least of active malady. But instead of death, the circle of febrile movement sometimes finishes its course by a crisis more or less perfect; but the advances to recovery are scarcely calculable: they are at the slowest rate. The patient staggers when he walks in his infected ward, like a person that is in some degree intoxicated, the countenance dull, heavy and lowering, threatening an impending storm. The storm sometimes comes suddenly—in form of apoplexy, suffocation of the lungs, gangrenous dysentery, or withering of the skin analogous to blight in plants; sometimes the approach to a renewal of the disease is gradual, marked by want of vigour and activity in the motion of the heart and arteries, a slow circulation tending to stagnation in the venous system, particularly in the mesentery, liver and spleen. If the sick apartment be

partially or irregularly ventilated, the disease often recurs with marks of strong vascular action; if the air be stagnant, equally vitiated through the whole extent of the ward, the first symptoms of the recurrence are ordinarily such as give an idea of what may be termed congestion, that is, a tendency to stagnation in the venous extremities; sometimes sudden, sometimes gradual in its approach. The danger from relapse is great in both cases,—imminent, where the subject of it is condemned to remain in the infected air of a crowded hospital; means of remedy are then of difficult management. If blood be drawn from the veins under the idea of congestion in the venous system, or suffocation of internal organs; and, if no means of relief be attempted except by depletion, I have reason to think that the fatal event will be often accelerated. On the other hand, if the sole trust be placed in stimulation, though life may be sometimes thereby saved, I have grounds to believe that death will, upon the whole, be much oftener precipitated. The case is difficult, and not simple. I have myself some confidence in the two methods combined, and alternated according to the circumstances of the individual condition. Under which ever of the forms the disease may appear in its recurrence—general or local, I consider immersion in a warm bath to be preliminary of other proceeding. The power of the bath will be ex-

mented by the infusion of some phials of *Eau de Cologne*, or other stimulating spirit: friction with the hand or brushes, while the body is under immersion, may also be considered as auxiliary of the general purpose. When the circulation appears to be animated, or the surface warmed by the means stated, a vein is to be opened in the arm, and blood abstracted under particular management; that is, the stream allowed to flow, or interrupted at intervals, the effect aided by immersion, friction, and the exhibition of such internal cordial as the patient most desires. By this means, that is, by alternated stimulation and depletion, the sluggish current of blood may be solicited to brisker movement, and the circulation, while animated, will be in some degree equalized; an effect which opens the chances for the action of remedies which have a tendency to reproduce the action of health. Of these, the aspersion of the surface with cold water, with vinegar, in which a certain portion of salt is dissolved, or friction of the skin with camphorated oil and oil of turpentine, are of some dependence. When such means have been applied with care in suitable circumstances, the patient, if removed to a well aired apartment, particularly if submitted to the impulse of pure air in gestation, has a fair chance of doing well; if returned to the infected air of his crowded ward, the prospect of recovery is dark:—the hopes of it can scarcely

be entertained. Emetics, and purgatives of the stimulating kind, combined with such means as have a tendency to move the secretions of the skin, are occasionally of benefit. Wine, spirits, bottled porter, brisk cyder, &c. given with a correctly measured discretion, are frequently useful; but, of all the cordial and refreshing remedies of which we have knowledge, pure air, and gestation in pure and open air in a convenient vehicle, is the most important, more valuable perhaps than all others put together.

The above suggestions, which I conceive might be useful in preventing relapse of contagious fever, or in averting danger when relapse actually does occur, contain no more than an outline of the principle by which the proceeding is supposed to be directed. If the medical officers of armies, or the physicians of the hospitals, which are erected for the reception of the sick of the civil part of the community, were master of their own arrangements, and had it in their power to command all the means which are necessary for the perfect execution of their duty, relapse would not, I believe, be frequent, and mortality from relapse, I have reason to think, would scarcely be known. As the case is, relapse is common in military hospitals, particularly at the great depots of sick called general hospitals; and, while common, the mortality, thence resulting, is often enormous. Two thirds, of those who die of conta-

gious fever, do not die before the expiration of the second or third week ; many not until after a series of relapses. The hospital return of armies furnishes evidence of the great extent of mortality occasioned by contagious fever during war ; the medical history of campaigns furnishes proof that the sickness, which occasions that mortality, is too often produced artificially ; that is, arises as a result of defective economy and unskilful management of the concerns of health. The fact is not equivocal ; it is proved in experience that hospital mortality does not so often arise from disease in its own simple nature, as from artificial aggravations of disease through misapprehension of causes and conditions. Contagious fever is liable to relapse ; and relapse is known to be fatal in a high proportion. This is common in the ordinary course of things ; but it is not a constitutional law—there is reason to believe that relapse may often, almost always be prevented. It is not difficult for the physician, who studies the science and comprehends the principle which regulates the movements of animal health, to say what may be done for prevention ; but he rarely can do more than say he has not authority to act. The medical art is a science ; but it is a science of difficult attainment. If attained, it is perhaps only attained in the evening of a long life which has been spent in the daily search of it ; and, as not of easy discovery, it cannot well be

supposed that a commissary at war, or a military commandant of hospitals, persons who are taken from the common mass of army officials should be possessed of it ; yet to such, the health concerns of armies, and the controul of army medical officers appear to be committed in most of the military services of the greater powers of Europe. The result is unfortunate, and it could not well be expected to be otherwise. The sick, as unserviceable, considered as refuse and incumbrance, are separated from the ranks and thrown together in the mass. Rarely classed by rule, at least by a rule arising from knowledge of the intimate nature of the conditions, artificial destruction of life is not unfrequently the consequence of measures that are taken ostensibly, by the ruling power, for life's preservation. I abstain from farther remark on the subject. Those who have served with armies are ready to bear witness to the great extent of mortality at the great depôts of sick, called general hospitals ; and those who reflect, so as to consider the causes of what they have seen, cannot be ignorant that such mortality is multiplied, if not in a manner created by artificial causes, principally by aggregation of subject, and injudicious arrangements in economy over which the physician, though in common opinion deemed responsible for the hospital result, has little controul.

ERRATA.

The Author being at too great a distance to superintend the press, has to apologize for the following Errata, which the reader is requested to correct with his pen.

Page	2	Line	5	for <i>has</i> read <i>had</i>
	5		6	After <i>though</i> insert <i>it</i>
	9		12	from bottom, for <i>Petchiæ</i> read <i>Petechiæ</i>
	„		14	Do. do. for <i>veinous</i> read <i>venous</i>
	16		14	Do. do. for <i>constructed</i> read <i>constricted</i>
	18		10	from top, for <i>Mack</i> read <i>Moek</i>
	19		last line,	for <i>Bathenburg</i> read <i>Battenburg</i>
	22		10	from top, for <i>unergetic</i> read <i>inergetic</i>
	23		7	Do. for <i>on</i> read <i>or</i>
	30		3	from bottom, for <i>visced</i> read <i>viscid</i>
	37		last line,	for <i>colapse</i> read <i>collapse</i>
	65		4	from bottom, for <i>idosyneraty</i> read <i>idiosyneraty</i>
	71		11	from do. after <i>was</i> insert <i>great</i>
	85		8	from top, for <i>not</i> read <i>most</i>
	92		3	Do. for <i>exterior</i> read <i>interior</i>
	96		7	from bottom, for <i>dry</i> read <i>dingy</i>
	107		13	from bottom, for <i>volative</i> read <i>volatile</i>
	108		12	from top, for <i>Petechie</i> read <i>Petechiæ</i>
	112		1	from bottom, for <i>preparatoril</i> read <i>preparatory</i>
	115		5	Do. do. for <i>Spit Head</i> read <i>Spithead</i>
	117		7	from top, for <i>8th</i> read <i>81st</i> .
	128		12	from top, after <i>to</i> cancel <i>the</i> , and for <i>of</i> read <i>with</i>
	149		7	after <i>causes</i> insert <i>of</i>
	152		first line,	for <i>purposes</i> read <i>purpose</i> , and 7th line, for <i>infection</i> read <i>inflation</i>
	165		1	from top, after <i>system</i> insert <i>ts</i> , and last line but one, after <i>vascular</i> insert <i>action</i>
	169		9	from top, for <i>various</i> read <i>varies</i>
	176		7	Do. do. for <i>course</i> read <i>cause</i> , and 8 from bottom, for <i>couse</i> read <i>course</i>
	177		3	from top, for <i>from a</i> read <i>form of</i>
	184		4	from bottom, for <i>evacutions</i> read <i>evacuations</i>
	191		9	Do. do. for <i>vcinous</i> read <i>venous</i>
	198		9	from top, for <i>sight</i> read <i>research</i>
	203		11	from bottom, for <i>distrcssed</i> read <i>depressed</i>
	227		12	Do. do. for <i>urging</i> read <i>verging</i>
	239		7	from top, for <i>constructed</i> read <i>constricted</i>
	242		11	Do. do. after <i>discipline</i> strike out <i>alluded to</i>
	248		5	Do. do. for <i>water</i> read <i>cold water</i>
	250		12	Do. do. for <i>every</i> read <i>very</i> and for <i>condilion</i> read <i>conditions</i>
	256		15	from bottom, for <i>sup</i> insert <i>di</i>
	268		7	from do. after <i>be</i> insert <i>safe</i>
	270		9	from do. for <i>fitted</i> read <i>filled</i>

嘉本A.D





